Germanic syntax

Stefan Müller

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Stefan Müller

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Preface

This book has two purposes: firstly the comparative analysis of the syntactic properties of the Germanic languages and secondly the introduction of a specific format for the description and comparison of languages. The framework in which the analyses are couched is called *HPSG light*. It is based on Head-Driven Phrase Structure Grammar (HPSG) (Pollard & Sag 1987; 1994) in the specific version that is described in detail in Müller (2013b). However HPSG light does not contain any complicated attribute value matrices (AVMs). If AVMs are used at all, they are reduced to the minimum containing a reduced set of features like ARG-ST for argument structure, COMPS for complements and SPR for specifier. All other aspects of the analyses are represented in syntactic trees, which are easier to read. The idea behind the introduction of HPSG light is to provide some tool for linguists who want to provide a more detailed description of a phenomenon without necessarily being forced to deal with all the technicalities. The degree of formalization corresponds to what is common in Government and Binding Theory, Minimalism, and the less formal variants of Construction Grammar. As for the one formal version of Construction Grammar that is a variant of HPSG, namely Sign-Based Construction Grammar (SBCG, Sag 2012), HPSG light can be regarded as a light version of SBCG as well, since the differences are neglected in the abbreviated representations and trees that are used in this book. The work presented here differs from non-formal work in GB/Minimalism and Construction Grammar in an important way: it is backed up by implemented grammars that use the full version of HPSG including a semantic analysis in the framework of Minimal Recursion Semantics (MRS, Copestake, Flickinger, Pollard & Sag (2005)). The detailed analyses are described in conference proceedings, journal articles and books and the reader is invited to consult these resources in case she or he is interested in the details. The implemented grammars are distributed with the Grammix virtual machine (Müller 2007b) and can be downloaded from the author's web-page. The appendix of this book contains a list of sentences that were discussed in the respective chapters of this book and which are covered by the grammars of the respective languages. Readers are invited to enter the sentences into the TRALE system (De Kuthy et al. 2004; Penn 2004) that comes with

Grammix and inspect the complete AVMs.

The book starts with two introductiory chapters: the first chapter introduces the Germanic languages providing basic facts like number of speakers, areas where they are spoken, some historical facts. Chapter two discusses the phenomena that are treated in the rest of the book, e.g., scrambling, placement of adverbials, passive, clause types, nonlocal dependencies. The third chapter is an introduction to Phrase Structure Grammars, which are the foundations of almost all theories since Chomsky's (1957) formalization of structuralist ideas (Bloomfield 1933). Chapter 3 not just introduces phrase structure grammars but also grammars using abstractions over phrase structure rules ultimately resulting in very abstract grammars of the type also known from $\overline{\text{X}}$ theory (Jackendoff 1977). Chapter 4 explains how the concept of valency is combined with abstract phrase structure rules to make sure that the right number and the right kind of elements is combined with a certain word. For example, a word like *laugh* needs a subject and a word like *read* needs a subject and an object. This has to be represented somewhere in a grammar and Chapter 4 explains how it is done in HPSG (light). The basic difference in the analysis of SVO and SOV languages are explained. This chapter also explains how the various orders of subject and objects can be explained in a language like German (so-called *scrambling*) and how the various placement possibilities in languages like English and the North Germanic languages on the one hand and German, Dutch and Afrikaans on the other hand can be accounted for. Verbal complexes are dealt with in Chapter 5, verb first position (used for question formation) and verb second position (for assertions) are explained in Chapter 6. Passive and case assignment in general is treated in Chapter 7. The Germanic languages are especially interesting here since Icelandic belongs to this language group and it is known for its quirky subjects (subjects in the genitive, dative, or accusative case, Zaenen et al. 1985). Chapter 8 deals with expletive pronouns and how they are used throughout the Germanic languages to help marking clause types. For example, expletives are used in German main clauses to fill the initial position so that the clause is an assertion. Danish uses expletives in embedded sentences with subjects as interrogative elements. Again the differences in general grammatical properties influence the grammar in other parts like placements of expletives.

The final chapter, Chapter 9, is a brief summary of what was done in the book an points the interested reader to some further literature on HPSG.

German slides developed for the course I am teaching with this book are available on github.[1] Lectures in German corresponding to the chapters can also be

[1] https://github.com/stefan11/germanic-syntax-slides, 2021-09-14.

found on youtube.[2]

On the way this book is published

Teachers at schools and universities are payed by the state, that is by the public (you). Among their duties is the creation of teaching material. There is no reason whatsoever to leave the teaching material to profit oriented publishers. On the contrary, teaching material should be open and adaptable to the needs of the teachers who want to use it.

A study by the American Enterprise Institute shows that the price of college books rose by 812 % from 1978 to 2012 while the general consumer prices rose a mere 250 %.[3] Similar figures exist for scientific books in general and for university text books. My favorite example is a thin text book on logic *Logik für Linguisten*, which is a translation of the English text book *Logic for Linguists* (Allwood et al. 1973). This book has 112 pages. It was sold for 9,40e as a paperback by the Max Niemeyer Verlag. This publisher was bought by De Gruyter and the book is now sold for $126.00/89,95€ as an eBook and $133,00/94,95€ for the hardcover book[4] (see Müller 2012 for other examples and a general discussion). Both the eBook and the printed book are unaffordable for students. The way out of this highly problematic situation is to publish books open access. The PDF version of this book is free for everybody and the printed copy is available for a reasonable price since the book is licenced under a Creative Commons license and hence is not owned by a profit-oriented publisher and everybody can choose his or her own print on demand service in case the default service provided by Language Science Press is more expensive.

Gender issues

Macaulay & Brice (1997) did a study on ten textbooks in syntax published between 1969 and 1994. They showed that some of the textbooks used examples describing violence against women. Examples like *John beats Mary.* or *John hits Mary.* were frequent in the 70ies and 80ies. I know of a paper written by two female authors and one male author containing a *John hits Mary* example.

[2] https://www.youtube.com/playlist?list=PLXwGGsuPxWRp4AB2LsWH6LKc0II7uc6tg

[3] http://www.aei-ideas.org/2012/12/the-college-textbook-bubble-and-how-the-open-educational-resources-movement-is-going-up-against-the-textbook-cartel/. 10.09.2014.

[4] http://www.degruyter.com/isbn/978-3-11-096350-2. 2014-09-01.

Macaulay & Brice (1997: 812) discus some even more extreme cases from the textbooks they examined. Furthermore, females were depicted in stereotypical situations like teaching children, never in work situations with the exception of work as secretaries. Some examples were explicitly sexist referring to women as stupid and to men as intelligent.

Macaulay & Brice examined the semantic roles in which women and men appeared, checked for usage of full NPs, proper names and pronouns. They found that men appear more often than women in example sentences and they appear more often as agents then as experiencers/patients. While openly sexist examples disappeared from textbooks in the time since the 80ies, Pabst et al. (2017) repeated the studies of Macaulay & Brice and noticed that not much has changed in respect to the women/men distribution in examples.

I think that such biased examples contribute to the stereotypes regarding genders that most of us have since they are deeply entrenched in our societies. Mikaela Wapman and Deborah Belle did a study asking students of psychology about the following situation: a father and son are in a horrible car crash and the father gets killed. The son is brought to the hospital and has to undergo an emergency surgery but the surgeon refuses to do it and say, "I can't operate—that boy is my son!". Question: How is this possible? People came up with all sorts of explanations like gay fathers, ghost surgeons and so on, overlooking the possibility of the surgeon being the mother of the child. This shows that the idea that surgeons are male is deeply entrenched in our societies (the same experiment works in German and it works in the other direction with nurses). The obvious solution to such problems is to change the employment of women and to change the payment of jobs usually taken by women. This is a political problem and it would be helpful if women were in at least 50 % of the positions in political systems. Many of the problems that women have can be traced back to a lack of economic independence. There is a good portray of East German women showing the consequences of economic independence: https://www.mdr.de/zeitreise/schwerpunkte/ostfrauen-106.html. When the wall came down and East German women and West German women united there was much confusion since the issues they wanted to address were totally different (see also the MDR video documentation). Almost all women in East Germany worked, child care was available everywhere and so on.

What we seem to have here is an hen egg problem: society and stereotypes would be different if women would be in other jobs and better payed, but stereotypes prevent women from even trying because they feel not welcome in certain jobs. Here is where language plays an important role. German marks gender for

professions: one can talk about *Kindergärtner* and *Kindergärtnerinnen*. Looking at the German grammatical system, the plural is unmarked for gender, but there is the form *Kindergärtnerinnen* that makes gender explicit. Studies show that recipients do not consider women if the unmarked form is used. For instance, Stahlberg et al. (2001) showed that people come up with more males when asked for their favorite *Musiker* rather than their favorite *Musiker* 'musician' or *Musikerin* 'female musician'. Germans solved this problem by using abbreviations for fusing both variants: *MusikerIn*. Further more inclusive forms have been developed including people with diverse genders: *Musiker*in*. These forms are standard in the communication of the German Research Foundation and some universities (e.g., the Humboldt-Universität zu Berlin, where I am currently working).

While the so-called *Binnen-I* helps to make women visible in communication this does not help as far as textbooks are concerned since respective forms are rather rarely used in examples. So, to make non-male readers feel more welcome, other means have to be employed. One has to work on the referents that are used in examples. The names used most frequently in examples in the papers/textbooks from which I was learning syntax (written in the 80ies and 90ies) were *John* and *Mary* or *Karl* and *Maria* in German publications. (Books on HPSG using gender neutral names like *Kim* and *Sandy* were an early exception (Pollard & Sag 1987; 1994).) I never used discriminating examples in my publications and I avoided stereotypes, but I also used *Karl* and *Maria* and I had *den Mann* 'the man' reading books and *der Mann* 'the man' giving books to *der Frau* 'the woman' or *dem Kind* (neuter, 'the child'). One reason for having more male referents in German examples is that the masculine inflection paradigm differentiates between all four cases while the feminine one collapses nominative and accusative as well as genitive and dative. The neuter is somewhere in the middle: nominative and accusative are syncretic. Table 1 gives an overview of the situation. If one wants

Table 1: Inflectional marking within noun phrases of feminine and masculine gender. Only the masculine paradigm is unambiguously marked for case.

	the man	the woman	the child
nominative	der Mann	die Frau	das Kind
genitive	des Mannes	der Frau	des Kindes
dative	dem Mann	der Frau	dem Kind
accusative	den Mann	die Frau	das Kind

to avoid male referents, one could use animals, but depending on the verb one

uses, a dolphin as subject would not make sense. So, one way to solve this problem, is to use proper names like *Kim*, *Sandy*, and *Chris* that are unisex. This is of course only possible if case is unimportant since proper names do not inflect for case in almost all of the Germanic languages (Icelandic being the exception, Zaenen et al. 1985: 443).

As mentioned above there is some tradition of what names are used in linguistic examples: for English it was *John* and *Mary*, for German *Karl* and *Maria*, Dutch authors used *Jan* and *Piet* and *Marie*. Since this book is about Germanic languages I thought I collect names that are typical for the languages under discussion. It is clear that the names trick does not work globally. I learned that *Gert* can be used both for women and men in the Scandinavian countries, but in Germany this name exclusively refers to males.[5] In addition speaker communities may associate certain names with women and girls since there are more females than males with this name in a certain community and vice versa. And finally there are differences on the individual level: you may happen to know three female Connys and no male one but this may change during the course of your live. So an example about Conny reading a book or feeding a child could work for or against a certain stereotype, depending on the experiences of the reader. And of course the assignment to a certain gender may change in time: a name that is given more often to girls may be given more often to boys some decades later. So, what I did is not perfect but since I state here that all names are meant to be unisex including non-binary people, it is a step into the right direction.

In a discussion on twitter, XY pointed out to me that names do not necessarily fit the gender of the referent. There are famous examples of a male US American lawyer with the name Sue[6] and of women with the name Michael (the columnist Michael Sneed, Chicago Sun-Times, and The Bangles' bassist Michael Steele).[7] So in principle one would have to make the gender of the referent explicit. But this is exactly what I want to avoid by using unisex names: I do not want to entrench stereotypes. By not using *Sue*, I do not have to say that Sue may be a man.

A special case are non-binary people. They may not feel represented in examples with unisex names like *Kim* and *Sandy*. This is the reason why they sometimes choose names that are not used by binary people. Kirby Conrod sug-

[5] See Bernadette La Hengst's song *Ein Mädchen namens Gerd* 'A girl named Gerd', which is a parallel to *A boy named Sue* by Johnny Cash: https://www.youtube.com/watch?v=Y6WVcOk4D3c, 2020-06-26.

[6] https://en.wikipedia.org/wiki/Sue_K._Hicks, 2020-07-06.

[7] https://en.wikipedia.org/wiki/Michael_Burnham, 2020-07-06.

gested that non-binary people give permission to use their names and allowed me to use theirs (Kirby's), which I do at some places in the book.

Table 2 shows the names I am using throughout the book.

Table 2: This table lists the names used in the book for the languages given

language	name	female basis	male basis
Danish	Gert/Gerd	Asgjerd, Hallgerd, Hildegard, Ingjerd	Gerhard
Dutch	Robin		Robrecht, Robert
	Benedikt		
German	Conny	Constanze, Cornelia	Conrad, Constantin
	Aicke		Eckehard
English	Chris	Christina, Christine	Christian, Christoph(er)
	Kim	Kimberly	Kimberly, Kimball, Joachim, Joakim
	Sandy	Sandra	Alexander, Sander, Alasdair
non-binary	Kirby		
	Elvan		

Berlin, 20th October 2021 Stefan Müller

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I thank the twitter community for discussing gender issues and names in linguistics examples with me. Special thanks go to Lauren Ackerman, Kirby Conrod, and Brianna Wilson for extensive discussion.

Abbreviations

PART particle
PREP preposition

1 A general overview of the Germanic languages

This chapter provides an overview of general facts about the Germanic languages. It derives from slides for teaching courses about Germanic languages that were used by Ekkehard König and passed on to Matthias Hüning and via Matthias to me, which explains the similarity to the introductionary chapter by Henriksen & van der Auwera (1994) in the book *The Germanic Languages* edited by König & van der Auwera (1994).

1.1 Languages and speakers

Depending on whom one asks there are app. 5000 to 6000 languages spoken worldwide currently. The Germanic languages are a small subset (depending on the counting 15 languages). The problem is the distinction between language and language variety (e.g., varieties of Frisian). According to Max Weinreich a language is a dialect with an army and a navy. According to this "definition", Swiss German would not be a language. That the Swiss army has a bicycle group instead of a navy does not help. This brief discussion should indicate that it is often a political question whether two variants of a language are treated as different languages or not (Slovak vs. Czech and Serbian vs. Croatian). Altogether there are almost 500 million native speakers, which is 1/12 of the whole population of the world. Especially English is wide spread in terms of regions in which the language is spoken.

1.2 Historical remarks and relatedness between the languages

The Germanic languages constitute a separate branch of the tree representing the indo-european language family (see Figure 1.1 on the following page). Proto-Germanic formed between 2000 and 1000 BC. Its origins are in the Baltic region,

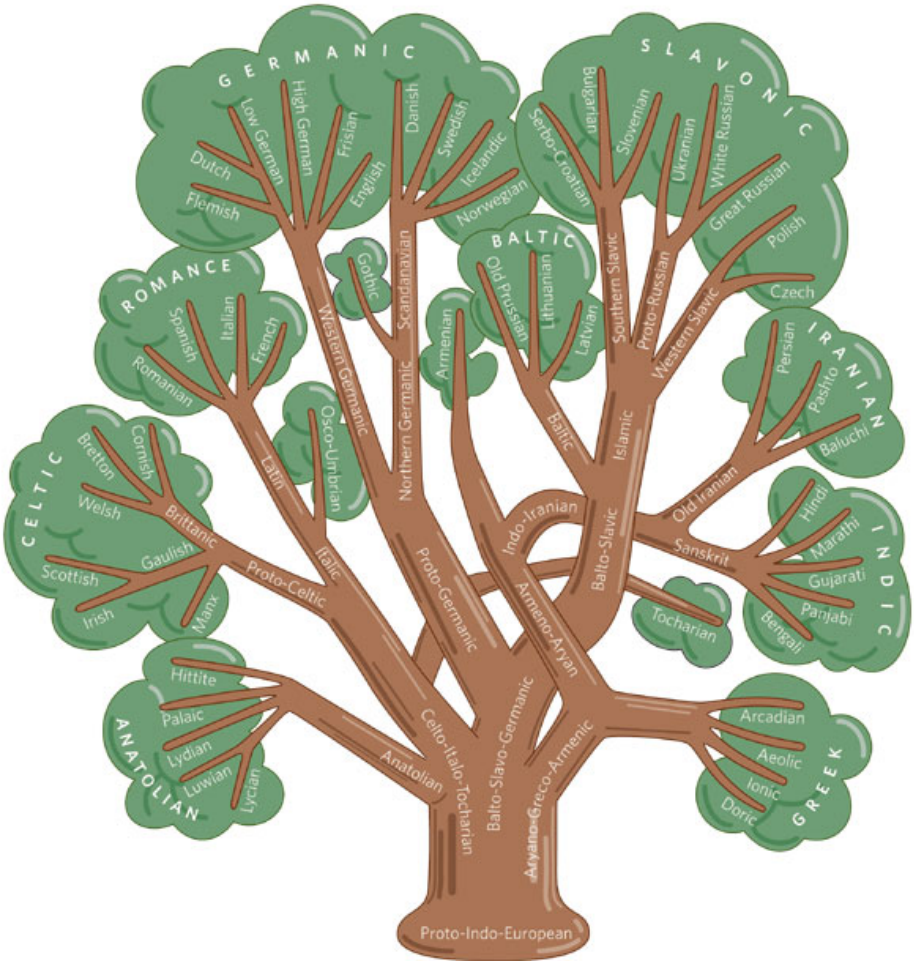

Figure 1.1: Language tree according to Fitch (2007: 665)

that is, in northern Germany and south Scandinavia. The area where it was spoken extended from the North Sea to Poland (app. 500 BC).

First Germanic Sound Shift took place app. until the second century BC. In that millenium the Germanic languages developed different consonants from the other indo-european languages. The first written documents are runes from app. 300 AC and the Gothic Bibel translation in the fourth century.

Wikipedia[1] provides the table in Figure 1.2 on the next page that depicts the development of the Germanic languages. Germanic is devided into East, West, and North Germanic. East Germanic existed in the form of Gothic until app. 1800 on the Crim, as Crimean Gothic and is now totally extinct. West Germanic consists of

- German,
- Yiddish,
- Luxembourgish,
- Pennsylvania Dutch,
- Low German,
- Plautdietsch (also called Mennonite Low German),
- Dutch,
- Afrikaans,
- Frisian, and
- English.

The North Germanic languages are:

- Danish,
- Swedish
- Norwegian
- Icelandic, and
- Faroese.

Table 1.1 on page 5 shows how similar the words from the main vocabulary of the Germanic languages are:

[1] https://en.wikipedia.org/wiki/Germanic_languages. 19.10.2014

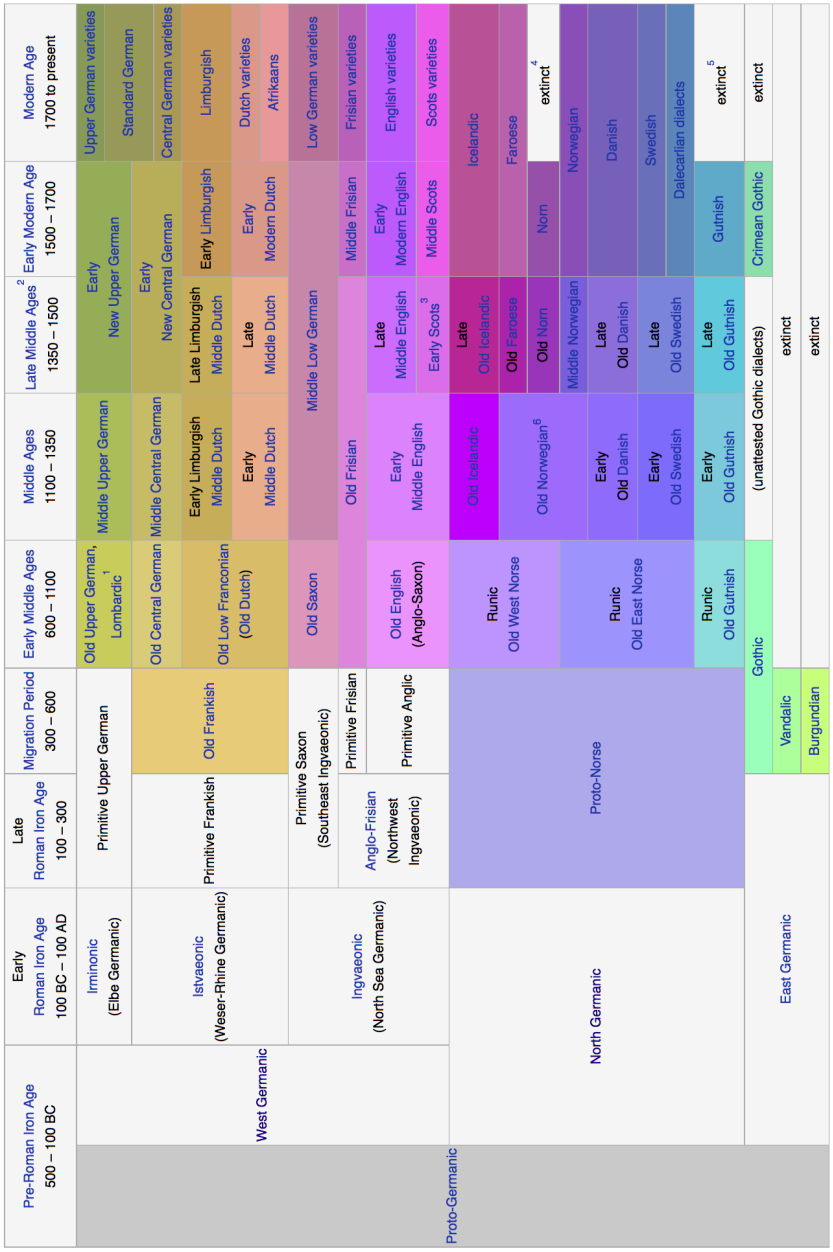

Figure 1.2: History and grouping of Germanic languages according to Wikipedia

Table 1.1: Words from the main vocabulary of some Germanic languages

Dutch	vader	vier	vol	huis	bruin	uit	kruid	muis
German	Vater	vier	voll	Haus	braun	aus	Kraut	Maus
English	father	four	full	house	brown	out	crowd (?)	mouse
Frisian	–	fjouwer	fol	hûs	brún	út	krûd	mûs
Swedish	fader	fyra	full	hus	brun	ut	krut	mus
Danish	fader	fire	fuld	hus	brun	ud	krudt	mus
Norwegian	far	fire	full	hus	brun	ut	krydder	mus
Iclandic	faðir	fjórir	fullur	hús	brúnn	út	–	mús

1.3 The three Germanic branches

Proto-Germanic developed into the three main branches East, West, and North Germanic, approximately in the first centuary AD. The reasons for this development were inherent variations in the respective dialects, migration (language contact) and standardization. This book treats the structure of the Germanic standard languages. This section is devided into three subsections that correspond to the three main Germanic branches. I will sketch over the historic developments that lead to the languages spoken today. Many of the details that are covered in Figure 1.2 will be ignored.

1.3.1 East Germanic

The Goths emigrated from the Danish islands and South Sweden approximately 100 BC and meet the Vandals and other tribes. Gothic and Burgundian and some smaller languages constitute the East Germanic branch, of which only Gothic got passed on. After the decay of the Gothic empires Gothic died out. There were some remains on the peninsula Crimea until app. 1800. The west gothic bishop Wulfila translated the Bible into Gothic. The best-known version of it is the fragment Codex Argenteus, which belongs to the university library of Uppsala. Figure 1.3 on the next page shows a picture of it.[2]

1.3.2 North Germanic

The first writings on runestones date back to the 6th century. The language of the Wikings (800–1050) was rather homogenous and it was only after this era that

[2] Taken from Wikipedia: http://de.wikipedia.org/wiki/Bild:Wulfila_bibel.jpg. 19.10.2014.

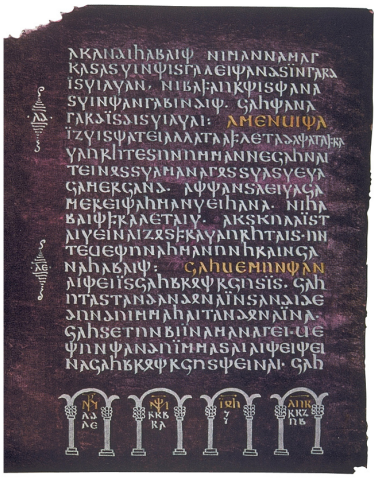

Figure 1.3: The Wulfila Bible (Codex Argenteus), picture from Wikipedia

two branches were starting to develop: the east-scandinavian branch with Old-Danish and Old-Swedish and the West-Scandinavian one with Old-Norwegian and Old-Icelandic.

1.3.2.1 Danish

Danish (dansk) is the official language of the Kingdom of Denmark, second official language of the Faroe Islands and of Greenland, Inuit being the first official language of Greenland. Danish has app. 5,5 million speakers. About 50,000 speakers live in Schleswig-Holstein, the northernmost of the federal states of Germany. Danish is the Scandinavian language that drifted furthest away from the common scandinavic roots.

1.3.2.2 Swedish

Swedisch (svenska) is the official language in Sweden with app. 8,5 million native speakers. It is the first language of app. 300,000 Swedish-speaking Finns in Finnland. Until the times of the Wikings Danish and Swedish were almost indistinguishable. Starting from app. 800 they started to diverge. Since app. 1300 there are obvious differences.

1.3.2.3 Iclandic

Icelandic (íslenska) is the west-scandinavian language of Iceland since the settlement over 1000 years ago. There are app. 325,000 native speakers. 97 % of the Icelandic population (325,000) has Icelandic as their mother tongue and there are larger groups of native speakers in Denmark, the USA, and Canada (app. 15,000 in total). There is almost no variation (no dialects). The language is conservative, in the sense that Icelandic is the language among the Germanic languages that best preserved the Germanic vocabulary and inflection. In the beginning there were almost no differences between Norwegian and Icelandic but then the langauges diverged.

1.3.2.4 Norwegian

There are two varieties of Norwegian (norsk): Danish-Norwegian (bokmål) and New-Norwegian (nynorsk). Both are official languages of Norway and are used in parallel. There are app. 4,3 million speakers. From 1380 to 1814 Danish was the written language and local dialects were spoken. Hence, a Norwegian standard had to be developed. This was done by Ivar Aasen (1813–1896), who developed Nynorsk. Nynorsk got an official status in 1885. Bokmål 'book tongue' is the first language of most of the Norwegians.

1.3.2.5 Faroese

Faroese (føroyskt) is – together with Danish – the official language of the Faroe Islands. There are app. 47,000 speakers. The Faroe Islands belong to Denmark since 1816. Since 1948 they are a self-governing country within the Danish Realm. Faroese has a strong Danish influence. The first manuscript transmission is as recent as 1773 and even then there are not many written documents (in contrast to Icelandic).

1.3.3 West Germanic

Opinions on the question whether West-Germanic did develop from a single source or not differ. Some authors assume that the West Germanic languages do not have a common root, but instead developed from the following three unrelated branches of dialect groups (for instance Robinson 1992: 17–18 and Henriksen & van der Auwera 1994: 9):

- North Sea Germanic

- Weser-Rhine Germanic
- Elbe Germanic

Other authors assume that these three branches had a common ancestor (see Figure 1.2).

There is no unique mapping of these dialect groups to the languages spoken today.

1.3.3.1 German

German is the official language of

- Germany (app. 80 million speakers),
- Austria (app. 7,5 million speakers),
- Liechtenstein (app. 15,000 speakers),
- Switzerland (4,2 million of 6,4 million Swiss residents),
- Northern Italy/South Tyrol (app. 270,000 speakers),
- Belgium (app. 65,000 speakers), and
- Luxembourg (app. 360,000 speakers).

Luxembourg has next to German also the original language Luxembourgish and French as official languages.

There are app. 97 million speakers of German, app. 90 of those are native speakers and 7 million have German as their second language. Approximately 80 million speakers speak German as a foreign language, app. 55 Milion of these live in the European Union.

There are three national main variants (Germany, Austria, Switzerland). In other countries German is usually a minority language. There are two larger dialect groups: Low German (Plattdüütsch, Nedderdüütsch; Standard German: Plattdeutsch or Niederdeutsch; Dutch: Nedersaksisch in the wider sense) and High German (varieties of German spoken south of the Benrath and Uerdingen isoglosses).

1.3.3.2 Yiddish

Yiddish is one of many Jewish languages. App. 2 million people speak this languages in various regions of the world, most of them in the USA (1,25 Mill.). The number of Yiddish speakers was much higher 100 years ago: 7 million speakers of Yiddish lived in Europe, most of them in Russia and in Austria-Hungary. At most 75,000 Yiddish speakers are left in Western Europe. Yiddish has its roots in medieval German with influences from Hebrew and Aramaic.

1.3.3.3 Pennsylvania German

Pennsylvania German (Pensilfaanish, Deitsch), which is also known as Pennsylvanian Dutch has app. 300,000 native speakers, who mainly live in the USA. The most important regions are Pennsylvania, Ohio, and Indiana. Pennsylvania German is the result of immigration in the 17th and 18th century. Members of various protestant religions (Mennonites, Pietists and so on) left Europe for reasons having to do with their religions but later immigrants that came for economic reasons followed. The language is based on Palatine dialects and is nowadays mainly spoken by Amish and Mennonites.

1.3.3.4 Dutch

Dutch (Nederlands) is the official language of the Netherlands and has app. 15 million speakers there. Dutch is one of the official languages of Belgium (app. 6 million speakers; almost 4 million Walloones). Dutch is the sole official language and teaching language in Suriname, which is independent since 1975, and in Aruba and the Netherlands Antilles.

1.3.3.5 Afrikaans

Afrikaans is one of the official languages of South Africa since 1925, which has eleven official languages. There are app. 6,4 million native speakers in South Africa, which is about 15 % of the population and 150,000 in Namibia. Afrikaans developed since the 17th century from Dutch dialects and is seen as an independent language since somewhere between 1775 and 1850 (den Besten 2012). The various languages spoken in the area interacted with Afrikaans and its origins and resulted in a structural simplification in comparison to Dutch. Today English has a strong influence.

1.3.3.6 Frisian

The three varieties of Frisian are mutually not intelligible. There is North Frisian spoken by app. 10,000 speakers mainly on the north Frisian islands Amrum, Sylt, and Helgoland. East Frisian is extinct with the exception of Saterlandic, which is spoken in the three villages of Saterland (Landkreis Cloppenburg) by between 1,000 and 2,500 people. West Frisian is spoken in the northern Dutch province Fryslân (Friesland) and has app. 350,000 native speakers.

1.3.3.7 English

English has app. 570 million speakers at the end of the 20th century all over the world (337 million native speakers, 235 million speakers with English as the second language). The following list provides the countries with the most native speakers:

- USA: 227 million,
- Great Britain: 57 million,
- Nigeria: 43 million,
- Canada: 24 million,
- Australia: 17 million,
- Ireland: 3,5 million,
- New Zealand: 3,2 million.

There are many national variants, which differ mostly in pronunciation. Between 1 and 1,5 billion people have active or passive knowledge of English. English is official language in 59 states. It is the most important scientific language.

2 Phenomena

This chapter deals with variation in the Germanic languages in what is often called the Core Grammar, that is in sentences of the *John loves Mary* variety.[1] We will look at differences in the verb position (verb before object and object before verb), the verb second property, which all of the Germanic languages with the exception of English have, the ordering of subjects and obejcts with respect to each other, the placement of adverbials, the existence/non-existence of verbal complexes, the obligatoriness/absence of subjects, passive including the personal and impersonal passive, expletive pronouns and various ways to mark the clause type, that is, to signal whether a certain clause is an assertion, a question or an embedded clause.

A note of caution is necessary here: especially the following three subsections are potentially confusing. A language like German will be categorized as an Subject-Object-Verb language, a verb-second language and a language with free constituent order (Haftka 1996). This sounds contradictory but it is not. The respective classifications refer to properties of languages as such not to the form of single sentences.

2.1 Order of subject, object and verb

The langauges of the world can be classified according to the order of subject, object, and verb that is dominant (Greenberg 1963). In order to make languages comparable a very general definition of grammatical functions like subject and object is used for such a classification. The definition is based on semantic properties: subjects are those arguments that are agentlike and objects are arguments that are rather patient like. This definition is not always identical to the language-particular definitions. For instance, if one follows the semantic definition, the

[1] Chomsky (1981: 7–8) suggests dividing grammars of natural languages into a core part and a periphery. All regular parts belong to the core. The core grammar of a language is assumed to be an instance of Universal Grammar (UG), the genetically determined innate language faculty of human beings. Idioms and other irregular parts of a language belong to the periphery. This book deals with phenomena usually assumed to be the core without assuming this core/periphery distinction and without assuming an UG (Müller 2014; 2015c).

phrase *der Aufsatz* 'the paper' in (1) is the subject although it is inanimate and not an agent:

(1) Der Aufsatz interessiert mich.
the paper interests me
'I am interested in the paper.'

The language-particular definition of subject in German (and the Germanic languages in general) rather refers to properties like nominative case, subject-verb-agreement, and control. We will deal with this in more detail in Section 7.1.1.

Figure 2.1 shows the dominant order of subject, object, and verb among the world's languages. According to Dryer (2013a) the dominant order is defined as follows:

> Where a language is shown on one of the word order maps as having a particular order as the dominant order in the language, this means that it is either the only order possible or the order that is more frequently used. (Dryer 2013a)

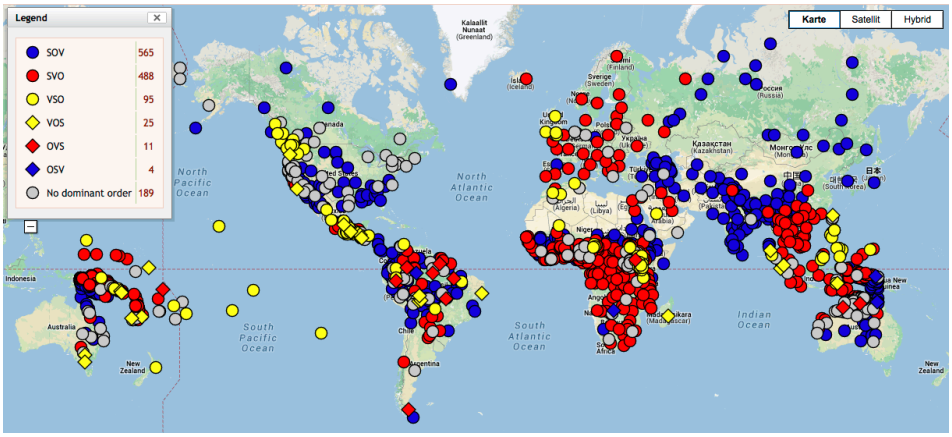

Figure 2.1: Dryer (2013b: Section 1): Feature 81A: Order of subject, object and verb, The World Atlas of Language Structures

If we zoom in to display the European languages we get Figure 2.2 on the next page. According to the WALS the languages Iclandic, Norwegian, Swedish, Danish, and English are SVO languages. Dutch, German, and Frisian, however, are marked in grey, that is, these languages are marked to have no dominant

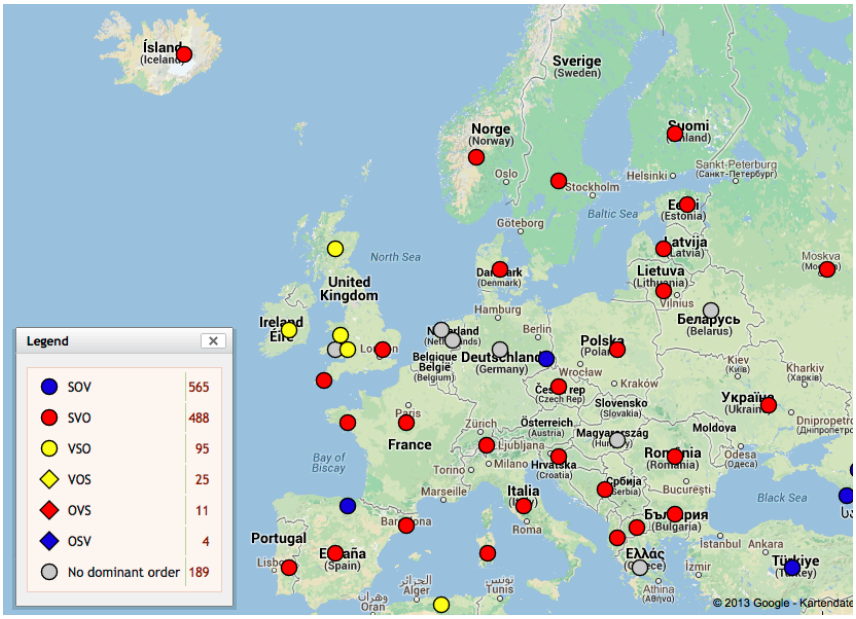

Figure 2.2: Dominant orders of subject, object, and verb in Europe

order.[2] According to Figure 2.3 on the following page these languages have two dominant orders, namely SOV and SVO. The reason for this classification is that Dryer (2013b: Section 1) distinguishes between sentences in which the finite verb is the main verb (2a) and sentences in which the finite verb is an auxiliary as in (2b):

(2) a. Kim sieht den Fuchs.
Kim sees the fox
'Kim sees the fox.'

b. Kim hat den Fuchs gesehen.
Kim has the fox seen
'Kim has seen the fox.'

According to Dryer the pattern for (2a) is SVO and the one for (2b) is SAuxOV, where Aux stands for the auxiliary verb. Like Greenberg (1963)[3], Dryer counts the latter pattern as SOV order. The question is whether it is adequate to ignore

[2] Greenberg (1963: 87) listed German and Dutch among the SVO languages.
[3] See Höhle (2019c: 20–21).

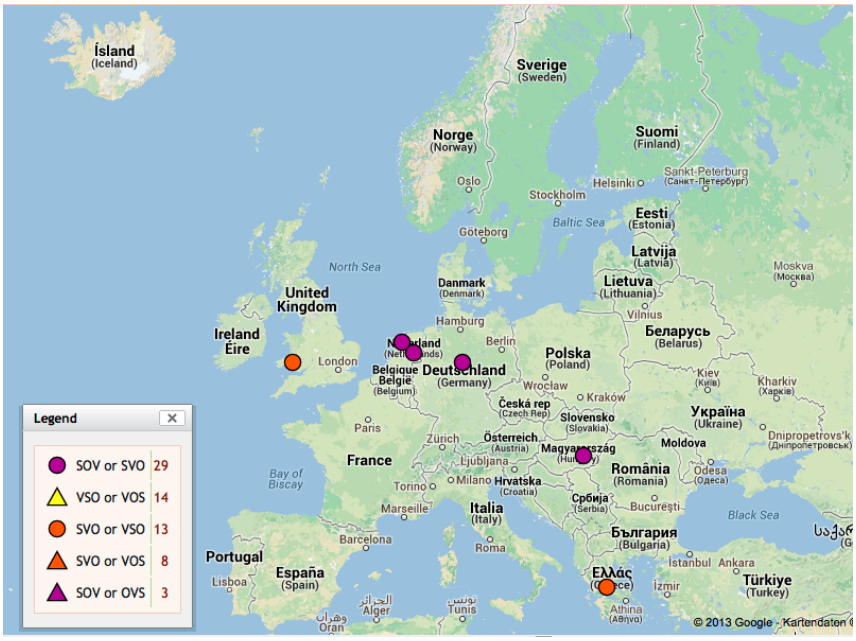

Figure 2.3: Two dominant orders of subject, object, and verb (Dryer 2013b: Section 3)

auxiliaries in the examination of constituent order. The auxiliary *hat* 'have' in (2b) syntactically behaves like the full verb *scheint* 'seems' in (3):

(3) Kim scheint den Fuchs zu sehen.
Kim seems the fox to see
'Kim seems to see the fox.'

So, here we would have an SVOV order, something that does not exist in the typology under discussion. The languages in Figure 2.3 marked as not having a dominant order use the verb position to mark the clause type: it is just the finite verb that is in first or second position. Non-finite verbs are final:

(4) Kim scheint den Fuchs gesehen zu haben.
Kim seems the fox seen to have
'Kim seems to have seen the fox.'

In subordinate clauses we have both the finite verb and the non-finite verbs in final position while we have the finite verb in initial position[4] in questions and

[4] I use the term initial position to refer to the position the finite verb has in V1 or V2 clauses.

declarative main clauses. A classification that is entirely based on counting patterns without taking auxiliary verbs and the finiteness/non-finiteness distinction into account cannot tear these properties apart (Höhle 1983: Section 3). In what follows we will have a look at clauses with both finite and non-finite verbs. Such clauses reveal differences between OV and VO languages and I will argue that Afrikaans, Dutch, German, and Frisian should be counted among the OV languages and that the other observable pattern SVO is due to other properties of these languages, namely that they mark the clause type by verb position and that they are verb second (V2) languages.[5]

When one builds more complex German sentences involving several verbs, the embedding verb is usually realized to the right of the embedded verbs. This is shown in (5). (5a) shows a simple sentence with a finite verb. If we form the perfect as in (5b), the perfect auxiliary has to follow the participle. The auxiliary is the finite verb and it determines the form of the participle. Hence the finite verb is the verb that embeds the participle. This is indicated by the lower number of *hat* in comparison to *gesehen*. If we build an even more complex sentence by adding another verb, this verb will be serialized to the right of the present verbs (5c). The Danish example in (6c), quoted from Ørsnes (2009: 146), corresponds to the German example in (5c).

(5) a. dass sie ihn sieht$_1$ (German)
that she him sees
'that she sees him'

b. dass sie ihn gesehen$_2$ hat$_1$
that she him seen has
'that she has seen him'

c. dass sie ihn gesehen$_3$ haben$_2$ muss$_1$
that she him seen have must
'that she must have seen him'

(6) a. at hun ser$_1$ ham (Danish)
that she sees him

b. at hun have$_1$ set$_2$ ham
that she has seen him

The analysis of V2 and V1 involves fronting of the finite verb. In V2 clauses a constituent is fronted in addition.

[5] The property of being a V2 language is independent of the SVO/SOV distinction. All Germanic languages except English are V2 languages. See Section 2.2 on V2.

c. at hun må$_1$ have$_2$ set$_3$ ham
that she must have seen him

As the examples in (6) show, the verbs are added in front of the verbs they embed in Danish. This is also the case for English as is evident from the glosses. In Danish and English the verbs precede the object (*ham*/*him*) and in German they follow it (*ihn*).

Haider (2020: Section 15.2) pointed out two further differences between the Germanic VO and OV languages: particles precede verbs in OV languages and the same is true for resultative secondary predicates. In VO languages particles and result predicates follow the verb. This is demonstrated by the following two example sets:

(7) a. Kim will look up the information.
b. Kim wird die Information nachschlagen. (German)
Kim will the information PART.beat
'Kim will look up the information.'

(8) a. Kim will fish the pond empty.
b. Kim wird den Teich leer fischen. (German)
Kim will the pond empty fish

(7a) shows that *look* precedes the particle *up*, while the verb *schlagen* 'beat' has to follow the particle *nach* in German. Similarly, the secondary resultative predicate *empty* follows the verb in (8a), but *leer* precedes the verb in (8b). Note that I used a future auxiliary in the examples in order to avoid side effects that are due to the verb second property of German: in declarative main clauses the finite verb always precedes particles and resultative predicates but this is due to the clause type (see Section 2.2).

I will return to the SVO vs. SOV order in Chapter 6 and provide more evidence that was used in the literature to argue for the OV status of languages like German and Dutch.

2.2 V2

The Germanic languages, with the exception of English, are so-called *verb second languages* (V2 languages). The V2 property can be illustrated with the following German sentences. (9) shows declarative main clauses in which one of the constituents is fronted. (10) shows parallel interrogative clauses.

(9) a. Das Kind gibt dem Eichhörnchen jetzt eine Nuss. (German)
the child gives the squirrel now a nut
'The child gives the squirrel a nut now.'

b. Dem Eichhörnchen gibt das Kind jetzt eine Nuss.
the squirrel gives the child now a nut

c. Eine Nuss gibt das Kind dem Eichhörnchen jetzt.
a nut gives the child the squirrel now

d. Jetzt gibt das Kind dem Eichhörnchen eine Nuss.
now gives the child the squirrel a nut

(10) a. Wer gibt dem Eichhörnchen jetzt eine Nuss? (German)
who gives the squirrel now a nut
'Who gives the squirrel a nut now?'

b. Wem gibt das Kind jetzt eine Nuss?
who gives the child now a nut
'Who does the child give a nut to now?'

c. Was gibt das Kind dem Eichhörnchen jetzt?
what gives the child the squirrel now
'What does the child give the squirrel now?'

d. Wann gibt das Kind dem Eichhörnchen eine Nuss?
when gives the child the squirrel a nut
'When does the child give the squirrel a nut?'

The finite verb is in second position in all the sentences in (9) and (10).

English, in contrast, does not allow orders in which the object appears immediately before the finite verb.

(11) a. * This squirrel give I a nut now.

b. * This nut give I a squirrel now.

c. * Tomorrow give I the squirrel a nut.

Adverbials and objects can be fronted but then they have to appear before the clause consisting of subject and verb and possibly other constituents.

(12) a. This nut, I give the squirrel now.

b. Now, I give the squirrel a nut.

Note also that fronting of objects is restricted to the secondary object for verbs with two objects for some speakers (Hudson 1992: 258).[6] So, while fronting of the secondary object in (13b) is permitted by all speakers, some speakers find extractions like the extraction of the primary object in (13c) unacceptable or marked.

(13) a. We give children sweets.
b. These sweets, we give children _.
c. % These children, we give _ sweets.

This is not the case in V2 languages: they are rather liberal as far as fronting is concerned. Basically all constituents can be fronted, exceptions being reflexive pronouns that are selected by inherently reflexive verbs (14), expletive objects (15), and certain modal particles (16). See also Hoberg (1981: 159) on inherently reflexive verbs and modal particles.

(14) a. Maria erholt sich. (German)
Maria recovers REFL
'Maria recovers.'
b. * Sich erholt Maria.
REFL recovers Maria

(15) a. Er bringt es bis zum Professor. (German)
he brings EXPL until to.the professor
'He makes it to professor.'
b. # Es bringt er bis zum Professor.
EXPL brings he until to.the professor

(16) a. Er geht halt nicht. (German)
he goes PARTICLE not
'He simply does not go.'
b. * Halt geht er nicht.
PARTICLE goes he not

The element in front of the finite verb is not necessarily a clause mate of the finite verb. In fact, it can belong to a deeply embedded head as is demonstrated by the following example from German:

[6] I use the terms *primary object* and *secondary object* in order to avoid confusion that is sometimes caused by the terms *direct* and *indirect object*. The primary object is the first object in English and the dative object of ditransitive verbs governing the dative in German. The secondary object is the second object in English and the accusative in German ditransitive constructions.

(17) [Über dieses Thema]$_i$ habe ich sie gebeten, [[einen Vortrag $_{-i}$] zu halten]?[7] (German)
about this topic have I her asked a talk to hold
'I asked her to give a talk about this topic.'

The PP *über dieses Thema* depends on *Vortrag* 'talk', which is part of the VP headed by *zu halten* 'to hold', which is in turn embedded under *gebeten* 'asked'. Sentences like (17) show that V2 frontings cannot be analyzed as a simple reordering of the arguments of a verb. While such an approach would work for the examples in (18), it would not extend to other cases in which the fronted element does not depend on the highest verb in the clause.

(18) Den Text kennt er.
the.ACC text knows he
'He knows the text.'

The following examples from Danish (SVO) show that the property of being a V2 language is independent of the VO/OV property:

(19) a. Gert har læst bogen. (Danish)
Gert has read book.DEF
b. Bogen har Gert læst.
book.DEF has Gert read

The example in (19a) shows that the object follows the verbs and (19b) shows that the object *bogen* 'the book' can appear in sentence initial position infront of the finite verb *har* 'have'.

The V2 order is used in declarative main clauses throughout the Germanic languages (without English). Some Germanic languages do not use V2 order in embedded clauses. For a discussion of embedded interrogatives see Section 2.5.

While English does not allow for the order object verb subject, which is possible in the other Germanic languages due to V2 fronting, it allows for the fronting of the object in questions resulting in structures that are parallel to what we know from the other Germanic languages:

(20) a. Which book did Sandy read?
b. Which book did Sandy give to Kim?
c. To whom did Sandy give the book?

[7] Adapted from Hinrichs & Nakazawa (1989a: 21).

English used to be a V2 language but lost this property. The V2 in questions is a residue of earlier stages of the language, which is why English is called a *residual V2 language* (Rizzi 1990: 375).

V2 and verb fronting in general is a way to mark clause types in all Germanic languages. V2 sentence can be declarative clauses in all Germanic languages except English and they can be questions in all Germanic languages including English. In addition V2 sentences may be imperatives, as (21) shows.

(21) Jetzt gib ihr das Buch! (German)
now give her the book
'Give her the book now!'

Sentences with the finite verb in first position (V1) can be yes/no questions or imperatives:

(22) a. Gibt er ihr das Buch? (German)
gives he her the book
'Does he give her the book?'
b. Gib ihr das Buch!
give her the book

Of course the order of elements is not the only cue as far as the clause type is concerned. Intonation and morphological marking of imperative forms plays a role as well.

The property of being a V2 language is exceedingly rare among the world's languages (Holmberg 2015: 343). Apart from the Germanic languages with the exception of Modern English (Haider & Prinzhorn 1986), there are only Estonian (Finno-Ugric, Holmberg 2015: 343), Sorbian (Plank 2003: entry 79) (a Slavic language), the Celtic languages Breton (Borsley & Kathol 2000), Cornish (Borsley, Tallerman & Willis 2007: 287), and Middle Welsh (Willis 1998), Old French (Adams 1987: Section 1.3; Roberts 1993: Section 2.1.2; Vance 1997: Chapter 2), Old Spanish (Fontana 1997: Section 3.3.2), Rhaeto-Romance (Poletto 2002; Anderson 2006), Kashmiri (Bhatt 1999: Chapter 4), two dialects of Himachali, which also belongs to Indo-Aryan and is spoken in regions adjacent to Kashmiri (Hendriksen 1990), the Austronesian languages Taiof and Sisiqa (Ross 2004: 495) and the Brazilian native language Karitiana from the language family Tupí (Storto 2003).

2.3 Scrambling

While the constituent order in languages like English is rather fixed, languages like Dutch and German allow a rather free permutation of arguments. In order not to contaminate the effects by reorderings that are due to the V2 property, I use verb last sentences to illustrate the phenomenon. Example (23) shows the only possible order for subject and objects of a simple ditransitive sentence without extraction:

(23) because the child gives the squirrel the nut (English)

If speakers want to realize the secondary object *the nut* before the primary object *the squirrel*, they have to use a prepositional object. This type of reordering is called *dative-shift* and an example is provided in (24):

(24) because the child gives the nut to the squirrel (English)

In contrast to this we have the German examples in (25). These examples show that the noun phrases can be freely permuted:

(25) a. [weil] das Kind dem Eichhörnchen die Nuss gibt (German)
because the child the squirrel the nut gives

b. [weil] das Kind die Nuss dem Eichhörnchen gibt
because the child the nut the squirrel gives

c. [weil] die Nuss das Kind dem Eichhörnchen gibt
because the nut the child the squirrel gives

d. [weil] die Nuss dem Eichhörnchen das Kind gibt
because the nut the squirrel the child gives

e. [weil] dem Eichhörnchen das Kind die Nuss gibt
because the squirrel the child the nut gives

f. [weil] dem Eichhörnchen die Nuss das Kind gibt
because the squirrel the nut the child gives

Not all of these orders can be used in all contexts. Some of the examples require a special, contrastive intonation. The orders can be sorted with respect to the number of contexts in which they can be used. Höhle (1982) suggests calling the order that can be used in most contexts the normal or unmarked order.

2.4 The position of adverbials

In languages like German and Dutch, the position of adverbials is rather free: the adverb *gestern* 'yesterday' can appear anywhere between the arguments and the verb:

(26) a. weil das Kind dem Eichhörnchen die Nuss *gestern* gab
because the child the squirrel the nut yesterday gave
(German)
'because the child gave the squirrel the nut yesterday'

b. weil das Kind dem Eichhörnchen *gestern* die Nuss gab
because the child the squirrel yesterday the nut gave

c. weil das Kind *gestern* dem Eichhörnchen die Nuss gab
because the child yesterday the squirrel the nut gave

d. weil *gestern* das Kind dem Eichhörnchen die Nuss gab
because yesterday the child the squirrel the nut gave

Dutch has free order of adverbials as well (Koster 1999: 4; Bouma 2003: Section 6). (27) shows the Dutch examples corresponding to (26):

(27) a. omdat het kind de eekhoorn de noot *gisteren* gaf (Dutch)
because the child the squirrel the nut yesterday gave
'because the child gave the squirrel the nut yesterday'

b. omdat het kind de eekhoorn *gisteren* de noot gaf
because the child the squirrel yesterday the nut gave

c. omdat het kind *gisteren* de eekhoorn de noot gaf
because the child yesterday the squirrel the nut gave

d. omdat *gisteren* het kind de eekhoorn de noot gaf
because yesterday the child the squirrel the nut gave

In contrast, the position of the adverbials is rather restricted in SVO languages like Danish and English. The adverbials usually are placed before or after the VP; that is, verb and objects form one unit and adverbials attach to the left or to the right of this unit. (28) provides an example:

(28) a. because the child often [gave the squirrel the nut] (English)
b. because the child [gave the squirrel the nut] often
c. * because the child [gave often the squirrel the nut]
d. * because the child [gave the squirrel often the nut]

It is assumed that verb and objects form a structural unit, a verb phrase (VP). Adverbials may attach to this VP forming a larger VP, which is than combined with the subject to form a complete sentence.

The following example, which is due to Quirk et al. (1985: § 8.20, 495), shows that even in very complex combinations of several verbs adverbs may be placed at the left periphery of a VP:

(29) It [certainly [$_{VP}$ may [possibly [$_{VP}$ have [indeed [$_{VP}$ been [badly [$_{VP}$ formulated]]]]]]]].

This is different from the OV languages where verbs form a verbal complex which usually cannot be interrupted by adverbs.

(30) a. dass das Kind dem Eichhörnchen die Nuss morgen geben dürfen muss
that the child the squirrel the nut tomorrow give may must
'that it must be possible that it is allowed that the child gives the squirrel the nut tomorrow'

b. * dass das Kind dem Eichhörnchen die Nuss geben morgen dürfen muss
that the child the squirrel the nut give tomorrow may must

c. * dass das Kind dem Eichhörnchen die Nuss geben dürfen morgen muss
that the child the squirrel the nut give may tomorrow must

2.5 Embedded clauses

This section deals with embedded clauses that are introduced by a complementizer and with embedded interrogative clauses. The Germanic languages vary with respect to the verb placement in these subordinate clauses and with respect to the question whether the embedded clauses are V2 or not.

2.5.1 Embedded clauses introduced by a complementizer

As was already mentioned Afrikaans, Dutch, German are SOV languages and this is shown in embedded clauses that are introduced by a complementizer. (31) is an example:

(31) Ich weiß, dass Aicke das Buch heute gelesen hat.
I know that Aicke the book today read has
'I know that Aicke read the book today.'

English, beeing an SVO non-V2 language allows for SVO order only.

(32) I know that Kim has read the book yesterday. (English)

Interestingly, Danish, also an SVO languauge, allows both SVO order (33) and V2 order (34) in clauses preceeded by a complementizer:

(33) Jeg ved, at Gert ikke har læst bogen i dag. (Danish)
I know that Gert not has read book.DEF today
'I know that Gert did not read the book today.'

(34) a. Jeg ved, at i dag har Gert ikke læst bogen. (Danish)
I know that today has Gert not read book.DEF

b. Jeg ved, at bogen har Gert ikke læst i dag.
I know that book.DEF has Gert not read today

The example in (33) includes the negation in order to show that we indeed deal with the SVO order here. Without the negation it is not clear whether non-V2 clauses are allowed in clauses that are introduced by a complementizer since (35a) has the finite verb in second position. With the negation present, it is clear that we have a V2 clause if the negation follows the finite verb and that we do not have a V2 clause if the finite verb follows the negation as in (33) and hence is in third position.

(35) a. at Gert har læst bogen (V2 or SVO)
that Gert has read book.DEF

b. at Gert har ikke læst bogen (V2)
that Gert has not read book.DEF

For complementizerless sentences the V2 order is the only one that is possible:

(36) a. Gert har ikke læst bogen (V2)
Gert has not read book.DEF

b. * Gert ikke har læst bogen (SVO)
Gert not has read book.DEF

Yiddish and Icelandic are SVO languages as well. The clauses that are combined with a complementizer are V2:

(37) a. Ikh meyn az haynt hot Max geleyent dos bukh.[8] (Yiddish)
I think that today has Max read the book
'I think that Max read the book today.'

b. Ikh meyn az dos bukh hot Max geleyent.
I think that the book has Max read

(38) Engum datt í hug, að vert væri að reyna til að kynnast
no.one.DAT fell to mind that worth was to try PREP to know
honum.[9] (Icelandic)
him
'It didn't occur to anyone that it was worth trying to get to know him.'

2.5.2 Interrogative clauses

The OV languages form subordinated interrogative clauses by preposing a phrase containing an interrogative pronoun[10] from an otherwise SOV clause. (39) shows a German example:

(39) a. Ich weiß, wer heute das Buch gelesen hat. (German)
I know who today the book read has
'I know who read the book today.'

b. Ich weiß, was Aicke heute gelesen hat.
I know what Aicke today read has
'I know what Aicke has read today.'

Since languages like German allow for scrambling, senteces like those in (39) could just be due to the permutation of arguments of a head. However, the generalization about these *w*-clauses is that an arbitrary *w*-element can be fronted. (40) gives an example from German that involves a nonlocal dependency:

(40) Ich weiß nicht, [über welches Thema]$_i$ sie versprochen hat,
I know not about which topic she promised has
[[einen Vortrag $\_i$] zu halten]. (German)
a talk to hold
'I do not know about which topic she promised to give a talk.'

[8] Diesing (1990: 58)

[9] Maling (1990: 75)

[10] Most interrogative pronouns start with *w* in German and *wh* in English. Phrases containing an interrogative pronoun are called *w*-phrases or *wh*-phrases, respectively. Interrogative clauses are sometimes called *w*-clauses or *wh*-clauses.

Here, the phrase *über welches Thema* 'about which topic' is an argument of *Vortrag*, which is embedded in the VP containing *zu halten* 'to hold', which is in turn embedded under *versprochen hat* 'promised has'. The generalization about interrogative clauses is that an interrogative clause consists of a interrogative phrase (*über welches Thema* 'about which topic') and a clause in which this interrogative phrase is missing somewhere (*er versprochen hat, einen Vortrag zu halten* 'he promised to give a talk').

In German the order of the other constituents is free as in assertive main clauses and embedded clauses with a complementizer that were discussed earlier.

(41) a. Ich weiß, was keiner diesem Eichhörnchen geben würde. (German)
I know what nobody this squirrel give would
'I know what nobody would give this man.'

b. Ich weiß, was diesem Eichhörnchen keiner geben würde.
I know what this squirrel nobody give would

In Danish and English the interrogative clauses consist of an interrogative phrase and an SVO clause in which it is missing:

(42) a. Gert har givet ham bogen. (Danish)
Gert has given him book.DEF
'Gert gave him the book.'

b. Jeg ved, hvad$_i$ [Gert har givet ham $\__i$].
I know what Gert has given him
'I know what Gert gave him.'

c. Jeg ved, hvem$_i$ [Gert har givet $\__i$ bogen].
I know who Gert has given book.DEF
'I know who Gert has given the book.'

(42a) shows the clause with SVO order and (42b) is an example with the secondary object as interrogative ponoun and (42c) is an example with the primary object as interrogative pronoun. The position that the respective objects have in non-interrogative clauses like (42a) is marked with $\__i$.

Yiddish is special in that it has a V2 order in interrogative clauses as well (Diesing 1990: Sections 4.1, 4.2): interrogatives consist of a interrogative phrase that is extracted from a V2 clause:

(43) Ir veyst efsher [avu do voynt Roznblat der goldshmid]?[11]
you know maybe where there lives Roznblat the goldsmith
'Do you perhaps know where Roznblat the goldsmith lives?'

So the variation is *w*-phrase + SOV, *w*-phrase + SVO, and *w*-phrase + V2.

2.6 The use of expletives to mark the clause type

The Germanic languages use constituent order to code the clause type: V2 main clauses can be assertions or questions, depending on the content of the preverbal material and intonation. Similarly embedded interrogative clauses consist of a *w*-phrase and an SVO, SOV, or V2 clause. The fronting of a constituent in a V2 clause comes with certain information structural effects: something is the topic or the focus of an utterance. For embedded sentences it is important for some languages that the structure is transparent that is that we have the *w* + SVO or *w* + V2 order. There are situations in which it is inappropriate to front an element and in such situations the Germanic languages use expletives, that is, pronouns that do not contribute semantically, to maintain a certain order.

German uses the expletive *es* to fill the position in front of the finite verb, if no other constituent is to be fronted.

(44) a. Drei Reiter ritten zum Tor hinaus. (German)
three riders rode to.the gate out
'Three riders rode out of the gate.'

b. Es ritten drei Reiter zum Tor hinaus.
EXPL rode three riders to.the gate out

Danish uses the expletive to make it clear that an extraction of a consituent took place (Müller & Ørsnes 2011: 169):[12]

(45) a. Politiet ved ikke, hvem der havde placeret
police.DEF knows not who EXPL has placed
bomben.[13] (Danish)
bomb.DEF
'The police does not know who placed the bomb.'

[11] Diesing (1990: 65). Quoted from Olsvanger, *Royte Pomerantsn*, 1949.

[12] Examples marked with DK are extracted from KorpusDK, a corpus of 56 Million words documenting contemporary Danish (http://ordnet.dk/korpusdk).

[13] DK

b. * Politiet ved ikke, hvem havde placeret bomben.
police.DEF knows not who has placed bomb.DEF

Without the expletive one would have a pattern like the one in (45b). In (45b) we have the normal SVO order and it is not obvious to the hearer that the pattern consists of an extracted element (the subject) and an SVO clause from which it is missing. This is more transparent if an expletive is inserted into the subject position as in (45a). (46) shows this using the analysis that will be suggested in Chapter 8: (46a) shows the hypothetical structure that would result if one assumed that the subject *hvem* 'who' is extracted. So-called *string-vacuous movement* would result: the subject is moved to a place right next to it. In (46b) on the other hand the subject position is taken by the expletive and hence it is clear that the embedded sentence has a special structure. There is an overt marker for the hearer or reader of the sentence marking it as an embedded interrogative clause.

(46) a. * [hvem$_i$ [$_{-i}$ havde placeret bomben]] (Danish)
who has placed bomb.DEF

b. [hvem$_i$ [der havde $_{-i}$ placeret bomben]]
who EXPL has placed bomb.DEF

Similarly Yiddish uses an expletive in embedded interrogatives (*w* + V2) if there is no other element that is information structurally appropriate for the preverbal position. (47) shows examples from Prince (1989: 403–404):

(47) a. ikh hob zi gefregt ver es iz beser far ir (Yiddish)
I have her asked who EXPL is better for her
'I have asked her who is better for her.'

b. ikh hob im gefregt vemen es kenen ale dayne khaverim
I have him asked whom EXPL know all your friends
'I asked him whom all your friends know.'

(47a) is an example involving an interrogative pronoun that is the subject and (47b) is an example in which the preverbal position is not filled by an argument of *kenen* 'know' but by an expletive. The subject *ale dayne khaverim* 'all your friends' stays behind and the object *vemen* 'whom' is extracted since it is the interrogative pronoun.

2.7 Verbal Complexes in OV languages

The OV languages have a verbal complex, or more general, a predicate complex, since adjectives take part in complex formation as well. (48) gives a German

example by Haider (1986b: 110; 1991: 128):

(48) weil es ihr jemand zu lesen versprochen hat (German)
because it.ACC her.DAT somebody.NOM to read promised has
'because somebody promised her to read it'

The arguments of the respective verbs can be mixed with arguments of other verbs. In the example above the *es* 'it' is not adjacent to its verb *lesen* 'to read', neither is *ihm* 'him' adjacent to *versprochen* 'promised' nor *jemand* to *hat* 'has'. In a more "well-behaved" ordering the object of *zu lesen* 'to read' is adjacent to the verb:

(49) weil jemand ihr das Buch zu lesen versprochen hat
because somebody her the book to read promised has
'because somebody promised her to read the book'

The ordering in (49) would allow for an analysis in which *das Buch zu lesen* forms a VP which is treated as an argument of *versprochen* 'promised'. However, this is not a viable analysis for (48) if one assumes that phrases have to be continuous.

One explanation of orders like the one in (48) is that the verbs form a unit that behaves like a simplex verb. As with the ditransitive verb *geben* 'to give' all permutations of the arguments of the verbs are possible in principle. So *zu lesen versprochen hat* forms a complex in both (48) and (49) and all permutations of the three arguments are permitted by the grammar.

VO languages like English and Danish do not allow permutations of arguments that belong to different verbs. In VO languages governing verbs always embed VPs. The following example indicates the structure:

(50) because somebody [will [promise him [to read the book]]]

2.8 Obligatoriness of subjects, case of subjects, and passives

SVO languages like English and Danish require a subject, while OV languages like German allow for subjectless constructions.

(51) a. Ihm graut vor der Prüfung. (German)
him.DAT dreads before the exam
'He dreads the exam.'

b. Heute wird nicht gearbeitet.
today is not worked
'There is no working today.'

According to the tests that were used for languages like Icelandic (for instance the possibility to omit a subject in infinitival constructions), the dative object *ihm* 'him' in (51a) is not a subject. There is no nominal argument at all in (51b). As we will discuss in Section 7, Icelandic has dative subjects (Zaenen et al. 1985), which makes it the most exciting language to study among the Germanic languages. We will see that a uniform analysis of case assignment is possible (Yip, Maling & Jackendoff 1987), although there is some variety in the inflectional systems of the Germanic languages.

As is shown in (51b), German allows for so-called impersonal passives. Impersonal passives are a special kind of passives in which no element gets promoted to subject. SVO languages like English, Danish do not allow subjectless constructions. English therefore does not allow impersonal passives at all as (52b) shows:

(52) a. weil noch gearbeitet wird (German)
because still worked is
'because there is still working there'
b. * because (it) was worked (English)

Interestingly, Danish found a way to fulfill the subject requirement and at the same time have impersonal passives: Danish simply inserts an expletive pronoun into the subject position:

(53) a. fordi der bliver arbejdet (Danish)
because EXPL is worked
'because there is working there'
b. fordi der arbejdes
because EXPL work.PASS
'because there is working there'

German does not allow for an expletive subject:

(54) * weil es noch gearbeitet wird (German)
because it still worked is
'because there is still working there'

It is possible to have an expletive pronoun in front of the finite verb as in (55), but this is a positional expletive whose purpose it is to mark the V2 sentence type.

(55) Es wird noch gearbeitet. (German)
EXPL is still worked
'There is still working there.'

The expletive is not an argument of any verb. The purely positional character of this expletive is shown by the fact that it does not appear in verb last sentences like (54).

2.9 Summary

This chapter provided an overview of the phenomena that are covered in this book. Of course we will look at everything in much more detail in the chapters to come. Let's start and get our hands dirty.

Comprehension questions

- What is the characteristics of a V2 language?
- If a language has many sentences with subject, verb, object order, do you know that the language is a V2 language?

3 Phrase structure grammars and $\overline{\text{X}}$ theory

This chapter introduces phase structure grammars (PSGs), which play an important role in many theories that were developed since Chomsky (1957). The phrase structure grammar developed in this chapter will be the basis for more complicated phenomena covered in the chapters to come. This chapter deals mainly with German and English, which is sufficient for the introduction of the formal apparatus of phrase structure grammars. The result of this chapter is a phrase structure grammar that is similar to $\overline{\text{X}}$ grammars of the style that was developed in the late 1970ies and the early 1980ies (Jackendoff 1977). The structures argued for in this chapter will also play a role in later chapters, but the lexical items will be much richer: they will contain valence information playing a crucial role in licensing syntactic structure.

Much time is spent on the structure of noun phrases. The main insights on the syntax of German noun phrases can be carried over to other Germanic languages. Later chapters will deal with the differences of the Germanic languages with respect to clause level syntax.

This chapter heavily draws from Müller (2020: Chapter 2), which is an updated translation of Müller (2013a: Chapter 2). Knowledge about basic concepts like part of speech and constituency tests is presupposed. Readers who feel the need to refresh their knowledge in these areas are referred to Chapter 1 of the Grammatical Theory textbooks.

3.1 Symbols and rewrite rules

Words can be assigned to a particular part of speech on the basis of their inflectional properties and syntactic distribution. Thus, *weil* 'because' in (1) is a conjunction, whereas *das* 'the' and *dem* 'the' are articles and therefore classed as determiners. Furthermore, *Buch* 'book' and *Kind* 'child' are nouns and *gibt* 'gives' is a verb.

(1) weil er das Buch dem Kind gibt
because he the book the child gives
'because he gives the child the book'

Using the constituency tests introduced in Müller (2020: Chapter 1), one can show that individual words as well as the strings *das Buch* 'the book' and *dem Kind* 'the child', form constituents. These get then assigned certain symbols. Since nouns form an important part of the phrases *das Buch* and *dem Kind*, these are referred to as *noun phrases* or NPs, for short. The pronoun *er* 'he' can occur in the same positions as full NPs and can therefore also be assigned to the category NP.

Phrase structure grammars come with rules specifying which symbols are assigned to certain kinds of words and how these are combined to create more complex units. A simple phrase structure grammar which can be used to analyze (1) is given in (2):[1,2]

(2)

NP → Det N	NP → er	N → Buch
S → NP NP NP V	Det → das	N → Kind
	Det → dem	V → gibt

We can therefore interpret a rule such as NP → Det N as meaning that a noun phrase, that is, something which is assigned the symbol NP, can consist of a determiner (Det) and a noun (N).

We can analyze the sentence in (1) using the grammar in (2) in the following way: first, we take the first word in the sentence and check if there is a rule in which this word occurs on the right-hand side of the rule. If this is the case, then we replace the word with the symbol on the left-hand side of the rule. This happens in lines 2–4, 6–7 and 9 of the derivation in (3). For instance, in line 2 *er* is replaced by NP. If there are two or more symbols which occur together on the right-hand side of a rule, then all these words are replaced with the symbol on the left. This happens in lines 5, 8 and 10. For instance, in line 5 and 8, Det and N are rewritten as NP.

[1] I ignore the conjunction *weil* 'because' for now. Since the exact analysis of German verb-first and verb-second clauses requires a number of additional assumptions, we will restrict ourselves to verb-final clauses in this chapter.

[2] The rule NP → er may seem odd. We could assume the rule PersPron → er instead but then would have to posit a further rule which would specify that personal pronouns can replace full NPs: NP → PersPron. The rule in (2) combines the two aforementioned rules and states that *er* 'he' can occur in positions where noun phrases can.

(3)

	words and symbols						rules that are applied
1	er	das	Buch	dem	Kind	gibt	
2	NP	das	Buch	dem	Kind	gibt	NP → er
3	NP	Det	Buch	dem	Kind	gibt	Det → das
4	NP	Det	N	dem	Kind	gibt	N → Buch
5	NP		NP	dem	Kind	gibt	NP → Det N
6	NP		NP	Det	Kind	gibt	Det → dem
7	NP		NP	Det	N	gibt	N → Kind
8	NP		NP		NP	gibt	NP → Det N
9	NP		NP		NP	V	V → gibt
10						S	S → NP NP NP V

In (3), we began with a string of words and it was shown that we can derive the structure of a sentence by applying the rules of a given phrase structure grammar. We could have applied the same steps in reverse order: starting with the sentence symbol S, we would have applied the steps 9–1 and arrived at the string of words. Selecting different rules from the grammar for rewriting symbols, we could use the grammar in (2) to get from S to the string *er dem Kind das Buch gibt* 'he the child the book gives'. We can say that this grammar licenses (or generates) a set of sentences.

The derivation in (3) can also be represented as a tree. This is shown by Figure 3.1. The symbols in the tree are called *nodes*. We say that S immediately

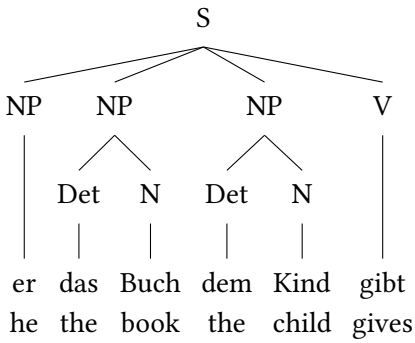

Figure 3.1: Analysis of *er das Buch dem Kind gibt* 'he the book the child gives'

dominates the NP nodes and the V node. The other nodes in the tree are also dominated, but not immediately dominated, by S. If we want to talk about the relationship between nodes, it is common to use kinship terms. In Figure 3.1, S is the *mother node* of the three NP nodes and the V node. The NP node and V are *sisters* since they have the same mother node. If a node has two daughters,

then we have a binary branching structure. If there is exactly one daughter, then we have a unary branching structure. Two constituents are said to be *adjacent* if they are directly next to each other.

Phrase structure rules are often omitted in linguistic publications. Instead, authors opt for tree diagrams or the compact equivalent bracket notation such as (4).

(4) [$_S$ [$_{NP}$ er] [$_{NP}$ [$_{Det}$ das] [$_N$ Buch]] [$_{NP}$ [$_{Det}$ dem] [$_N$ Kind]] [$_V$ gibt]]
he the book the child gives

Nevertheless, it is the grammatical rules which are actually important since these represent grammatical knowledge which is independent of specific structures. In this way, we can use the grammar in (2) to parse or generate the sentence in (5), which differs from (1) in the order of objects:

(5) [weil] er dem Kind das Buch gibt
because he.NOM the.DAT child the.ACC book gives
'because he gives the child the book'

The rules for replacing determiners and nouns are simply applied in a different order than in (1). Rather than replacing the first Det with *das* 'the' and the first noun with *Buch* 'book', the first Det is replaced with *dem* 'the' and the first noun with *Kind*.

At this juncture, I should point out that the grammar in (2) is not the only possible grammar for the example sentence in (1). There is an infinite number of possible grammars which could be used to analyze these kinds of sentences (see Müller (2020: Chapter 2) exercise 1). Another possible grammar is given in (6):

(6)

NP → Det N	NP → er	N → Buch
V → NP V	Det → das	N → Kind
	Det → dem	V → gibt

This grammar licenses binary branching structures as shown in Figure 3.2 on the facing page.

Both the grammar in (6) and (2) are too imprecise. If we adopt additional lexical entries for *ich* 'I' and *den* 'the' (accusative) in our grammar, then we would incorrectly license the ungrammatical sentences in (7b–d):[3]

[3] With the grammar in (6), we also have the additional problem that we cannot determine when an utterance is complete since the symbol V is used for all combinations of V and NP. Therefore, we can also analyze the sentence in (i) with this grammar:

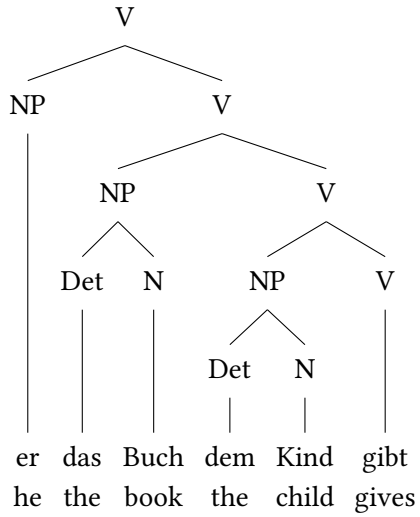

Figure 3.2: Analysis of *er das Buch dem Kind gibt* with a binary branching structure

(7) a. er das Buch dem Kind gibt
he.NOM the.ACC book the.DAT child gives
'He gives the book to the child.'

b. * ich das Buch dem Kind gibt
I.NOM the.ACC book the.DAT child gives

c. * er das Buch den Kind gibt
he.NOM the.ACC book the.ACC child gives

d. * er den Buch dem Kind gibt
he.NOM the.M book(N) the child gives

In (7b), subject-verb agreement has been violated, in other words: *ich* 'I' and *gibt* 'gives' do not fit together. (7c) is ungrammatical because the case requirements of

(i) a. * der Delphin erwartet
the.NOM dolphin expects

b. * des Kindes er das Buch dem Kind gibt
the.GEN child.GEN he.NOM the.ACC book the.DAT child gives

The number of arguments required by a verb must be somehow represented in the grammar. In Chapter 4, we will see exactly how the selection of arguments by a verb (valence) is captured in HPSG.

the verb have not been satisfied: *gibt* 'gives' requires a dative object. Finally, (7d) is ungrammatical because there is a lack of agreement between the determiner and the noun. It is not possible to combine *den* 'the', which is masculine and bears accusative case, and *Buch* 'book' because *Buch* is neuter gender. For this reason, the gender properties of these two elements are not the same and the elements can therefore not be combined.

In the following, we will consider how we would have to change our grammar to stop it from licensing the sentences in (7b–d). If we want to capture subject-verb agreement, then we have to cover the following six cases in German, as the verb has to agree with the subject in both person (1, 2, 3) and number (sg, pl):

(8)
a. Ich schlafe. (1, sg)
I sleep
b. Du schläfst. (2, sg)
you sleep
c. Er/sie/es schläft. (3, sg)
he/she/it sleeps
d. Wir schlafen. (1, pl)
we sleep
e. Ihr schlaft. (2, pl)
you sleep
f. Sie schlafen. (3, pl)
they sleep

It is possible to capture these relations with grammatical rules by increasing the number of symbols we use. Instead of the rule S → NP NP NP V, we can use the following:

(9)
S → NP_1_sg NP NP V_1_sg
S → NP_2_sg NP NP V_2_sg
S → NP_3_sg NP NP V_3_sg
S → NP_1_pl NP NP V_1_pl
S → NP_2_pl NP NP V_2_pl
S → NP_3_pl NP NP V_3_pl

This would mean that we need six different symbols for noun phrases and verbs respectively, as well as six rules rather than one.

In order to account for case assignment by the verb, we can incorporate case information into the symbols in an analogous way. We would then get rules such as the following:

(10) S → NP_1_sg_nom NP_dat NP_acc V_1_sg_nom_dat_acc
S → NP_2_sg_nom NP_dat NP_acc V_2_sg_nom_dat_acc
S → NP_3_sg_nom NP_dat NP_acc V_3_sg_nom_dat_acc
S → NP_1_pl_nom NP_dat NP_acc V_1_pl_nom_dat_acc
S → NP_2_pl_nom NP_dat NP_acc V_2_pl_nom_dat_acc
S → NP_3_pl_nom NP_dat NP_acc V_3_pl_nom_dat_acc

Since it is necessary to differentiate between noun phrases in four cases, we have a total of six symbols for NPs in the nominative and three symbols for NPs with other cases. Since verbs have to match the NPs, that is, we have to differentiate between verbs which select three arguments and those selecting only one or two (11), we have to increase the number of symbols we assume for verbs.

(11) a. Aicke schläft.
Aicke sleeps
'Aicke is sleeping.'

b. * Aicke schläft das Buch.
Aicke sleeps the book

c. Aicke kennt das Buch.
Aicke knows the book
'Aicke knows the book.'

d. * Aicke kennt.
Aicke knows

In the rules above, the information about the number of arguments required by a verb is included in the marking 'nom_dat_acc'.

In order to capture the determiner-noun agreement in (12), we have to incorporate information about gender (fem, mas, neu), number (sg, pl), case (nom, gen, dat, acc) and the inflectional classes (strong, weak)[4].

(12) a. der Mann, die Frau, das Buch (gender)
the.M man(M) the.F woman(F) the.N book(N)

b. das Buch, die Bücher (number)
the book.SG the books.PL

c. des Buches, dem Buch (case)
the.GEN book.GEN the.DAT book

d. ein Beamter, der Beamte (inflectional class)
a civil.servant the civil.servant

[4] These are inflectional classes for adjectives which are also relevant for some nouns such as *Beamter* 'civil servant', *Verwandter* 'relative', *Gesandter* 'envoy'.

Instead of the rule NP → Det N, we will have to use rules such as those in (13):[5]

(13)
NP_3_sg_nom → Det_fem_sg_nom N_fem_sg_nom
NP_3_sg_nom → Det_mas_sg_nom N_mas_sg_nom
NP_3_sg_nom → Det_neu_sg_nom N_neu_sg_nom
NP_3_pl_nom → Det_fem_pl_nom N_fem_pl_nom
NP_3_pl_nom → Det_mas_pl_nom N_mas_pl_nom
NP_3_pl_nom → Det_neu_pl_nom N_neu_pl_nom

NP_3_sg_nom → Det_fem_sg_nom N_fem_sg_nom
NP_3_sg_nom → Det_mas_sg_nom N_mas_sg_nom
NP_3_sg_nom → Det_neu_sg_nom N_neu_sg_nom
NP_3_pl_nom → Det_fem_pl_nom N_fem_pl_nom
NP_3_pl_nom → Det_mas_pl_nom N_mas_pl_nom
NP_3_pl_nom → Det_neu_pl_nom N_neu_pl_nom

(13) shows the rules for nominative noun phrases. We would need analogous rules for genitive, dative, and accusative. We would then require 24 symbols for determiners ($3 * 2 * 4$), 24 symbols for nouns and 24 rules rather than one. If inflection class is taken into account, the number of symbols and the number of rules doubles.

3.2 Expanding PSG with features

Phrase structure grammars which only use atomic symbols are problematic as they cannot capture certain generalizations. We as linguists can recognize that NP_3_sg_nom stands for a noun phrase because it contains the letters NP. However, in formal terms this symbol is just like any other symbol in the grammar and we cannot capture the commonalities of all the symbols used for NPs. Furthermore, unstructured symbols do not capture the fact that the rules in (13) all have something in common. In formal terms, the only thing that the rules have in common is that there is one symbol on the left-hand side of the rule and two on the right.

We can solve this problem by introducing features which are assigned to category symbols and therefore allow for the values of such features to be included in our rules. For example, we can assume the features person, number and case for the category symbol NP. For determiners and nouns, we would adopt an ad-

[5] To keep things simple, these rules do not incorporate information regarding the inflection class.

ditional feature for gender and one for inflectional class. (14) shows two rules augmented by the respective values in brackets:[6]

(14) NP(3,sg,nom) → Det(fem,sg,nom) N(fem,sg,nom)
NP(3,sg,nom) → Det(mas,sg,nom) N(mas,sg,nom)

If we were to use variables rather than the values in (14), we would get rule schemata as the one in (15):

(15) NP(3,Num,Case) → Det(Gen,Num,Case) N(Gen,Num,Case)

The values of the variables here are not important. What is important is that they match. For this to work, it is important that the values are ordered; that is, in the category of a determiner, the gender is always first, number second and so on. The value of the person feature (the first position in the NP(3,Num,Case)) is fixed at '3' by the rule. These kind of restrictions on the values can, of course, be determined in the lexicon:

(16) NP(3,sg,nom) → es
Det(mas,sg,gen) → des

The rules in (10) can be collapsed into a single schema as in (17):

(17) S → NP(Per1,Num1,nom)
NP(Per2,Num2,dat)
NP(Per3,Num3,acc)
V(Per1,Num1,ditransitive)

The identification of Per1 and Num1 on the verb and on the subject ensures that there is subject-verb agreement. For the other NPs, the values of these features are irrelevant. The case of these NPs is explicitly determined.

3.3 Phrase structure rules for some aspects of German syntax

Whereas determining the direct constituents of a sentence is relative easy, since we can very much rely on the movement test due to the somewhat flexible order of constituents in German, it is more difficult to identify the parts of the noun

[6] In the following chapters, attribute value structures will be used. In these structures, we always have pairs of a feature name and a feature value. In such a setting, the order of values is not important, since every value is uniquely identified by the corresponding feature name. Since we do not have a feature name in schemata like (13), the order of the values is important.

phrase. This is the problem we will focus on in this section. To help motivate assumptions about $\overline{X}$ syntax to be discussed in Section 3.4, we will also discuss prepositional phrases.

3.3.1 Noun phrases

Up to now, we have assumed a relatively simple structure for noun phrases: our rules state that a noun phrase consists of a determiner and a noun. Noun phrases can have a distinctly more complex structure than (18a). This is shown by the following examples in (18):

(18) a. ein Buch
a book

b. ein Buch, das wir kennen
a book that we know

c. ein Buch aus Japan
a book from Japan

d. ein interessantes Buch
an interesting book

e. ein Buch aus Japan, das wir kennen
a book from Japan that we know

f. ein interessantes Buch aus Japan
an interesting book from Japan

g. ein interessantes Buch, das wir kennen
an interesting book that we know

h. ein interessantes Buch aus Japan, das wir kennen
an interesting book from Japan that we know

As well as determiners and nouns, noun phrases can also contain adjectives, prepositional phrases and relative clauses. The additional elements in (18) are adjuncts. They restrict the set of objects which the noun phrase refers to. Whereas (18a) refers to a being which has the property of being a book, the referent of (18b) must also have the property of being known to us.

Our previous rules for noun phrases simply combined a noun and a determiner and can therefore only be used to analyze (18a). The question we are facing now is how we can modify this rule or which additional rules we would have to assume

in order to analyze the other noun phrases in (18). In addition to rule (19a), one could propose a rule such as the one in (19b).[7,8]

(19) a. NP → Det N
b. NP → Det A N

However, this rule would still not allow us to analyze noun phrases such as (20):

(20) alle weiteren schlagkräftigen Argumente
all further strong arguments
'all other strong arguments'

In order to be able to analyze (20), we require a rule such as (21):

(21) NP → Det A A N

It is always possible to increase the number of adjectives in a noun phrase and setting an upper limit for adjectives would be entirely arbitrary. Even if we opt for the following abbreviation, there are still problems:

(22) NP → Det A* N

The asterisk in (22) stands for any number of iterations. Therefore, (22) encompasses rules with no adjectives as well as those with one, two or more.

The problem is that according to the rule in (22) adjectives and nouns do not form a constituent and we can therefore not explain why coordination is still possible in (23):

(23) alle [[großen Seeelefanten] und [grauen Eichhörnchen]]
all big elephant.seals and grey squirrels
'all the big elephant seals and grey squirrels'

If we assume that coordination involves the combination of two or more word strings with the same syntactic properties, then we would have to assume that the adjective and noun form a unit.

The following rules capture the noun phrases with adjectives discussed thus far:

(24) a. NP → Det $\overline{\text{N}}$
b. $\overline{\text{N}}$ → A $\overline{\text{N}}$

[7] See Eisenberg (2004: 238) for the assumption of flat structures in noun phrases.

[8] There are, of course, other features such as gender and number, which should be part of all the rules discussed in this section. I have omitted these in the following for ease of exposition.

c. $\overline{\text{N}} \rightarrow \text{N}$

These rules state the following: a noun phrase consists of a determiner and a nominal element ($\overline{\text{N}}$). This nominal element can consist of an adjective and a nominal element (24b), or just a noun (24c). Since $\overline{\text{N}}$ is also on the right-hand side of the rule in (24b), we can apply this rule multiple times and therefore account for noun phrases with multiple adjectives such as (20). Figure 3.3 shows the structure of a noun phrase without an adjective and that of a noun phrase with one or two adjectives. The adjective *grau* 'grey' restricts the set of referents

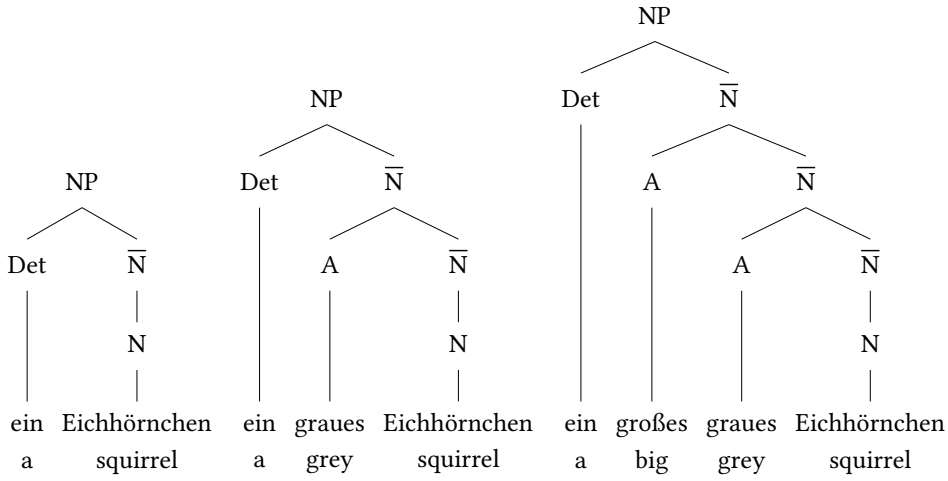

Figure 3.3: Noun phrases with differing numbers of adjectives

for the noun phrase. If we assume an additional adjective such as *groß* 'big', then it only refers to those squirrels who are grey as well as big. These kinds of noun phrases can be used in contexts such as the following:

(25) A: Alle grauen Eichhörnchen sind groß.
all grey squirrels are big
'All grey squirrels are big.'
B: Nein, ich habe ein kleines graues Eichhörnchen gesehen.
no I have a small grey squirrel seen
'No, I saw a small grey squirrel.'

We observe that this discourse can be continued with *Aber alle kleinen grauen Eichhörnchen sind krank* 'but all small grey squirrels are ill' and a corresponding answer. The possibility to have even more adjectives in noun phrases such as *ein*

kleines graues Eichhörnchen 'a small grey squirrel' is accounted for in our rule system in (24). In the rule (24b), $\overline{\text{N}}$ occurs on the left as well as the right-hand side of the rule. This kind of rule is referred to as *recursive*.

We have now developed a nifty little grammar that can be used to analyze noun phrases containing adjectival modifiers. As a result, the combination of an adjective and noun is given constituent status. One may wonder at this point if it would not make sense to also assume that determiners and adjectives form a constituent, as we also have the following kind of noun phrases:

(26) diese schlauen und diese neugierigen Eichhörnchen
these smart and these curious squirrels

Here, we are dealing with a different structure, however. Two full NPs have been conjoined and part of the first conjunct has been deleted.

(27) diese schlauen ~~Eichhörnchen~~ und diese neugierigen Eichhörnchen
these smart squirrels and these curious squirrels

One can find similar phenomena at the sentence and even word level:

(28) a. dass Conny dem Kind das Buch ~~gibt~~ und Aicke der Frau die Schallplatte gibt
that Conny the child the book gives and Aicke the woman the record gives
'that Conny gives the book to the child and Aicke the record to the woman'

b. be- und ent-laden
PRFX and PRFX-load
'load and unload'

Thus far, we have discussed how we can ideally integrate adjectives into our rules for the structure of noun phrases. Other adjuncts such as prepositional phrases or relative clauses can be combined with $\overline{\text{N}}$ in an analogous way to adjectives:

(29) a. $\overline{\text{N}} \rightarrow \overline{\text{N}}$ PP
b. $\overline{\text{N}} \rightarrow \overline{\text{N}}$ relative clause

With these rules and those in (24), it is possible – assuming the corresponding rules for PPs and relative clauses – to analyze all the examples in (18).

(24c) states that it is possible for $\overline{\text{N}}$ to consist of a single noun. A further important rule has not yet been discussed: we need another rule to combine nouns such as *Vater* 'father', *Sohn* 'son' or *Bild* 'picture', so-called *relational nouns*, with

their arguments. Examples of these can be found in (30a–b). (30c) is an example of a nominalization of a verb with its argument:

(30) a. der Vater von Peter
the father of Peter
'Peter's father'

b. das Bild vom Gleimtunnel
the picture of.the Gleimtunnel
'the picture of the Gleimtunnel'

c. das Kommen der Installateurin
the coming of.the plumber
'the plumber's visit'

The rule that we need to analyze (30a,b) is given in (31):

(31) $\overline{\text{N}} \rightarrow \text{N PP}$

Figure 3.4 shows two structures with PP-arguments. The tree on the right also contains an additional PP-adjunct, which is licensed by the rule in (29a).

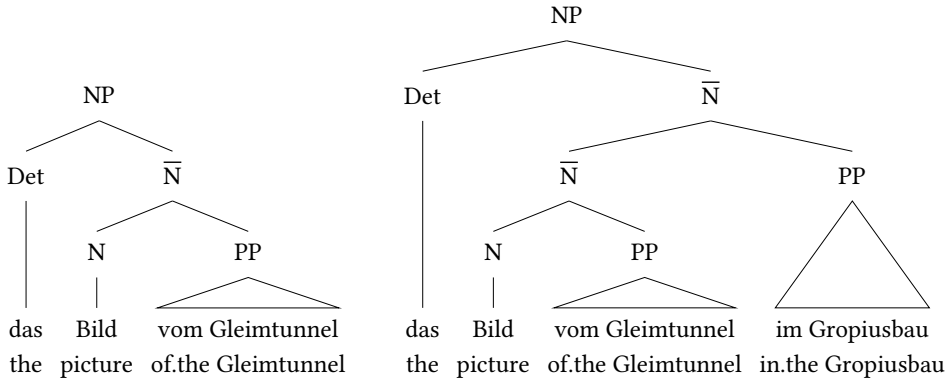

Figure 3.4: Combination of a noun with PP complement *vom Gleimtunnel* to the right with an adjunct PP

In addition to the previously discussed NP structures, there are other structures where the determiner or noun is missing. Nouns can be omitted via ellipsis. (32) gives an example of noun phrases, where a noun that does not require a complement has been omitted. The examples in (33) show NPs in which only one determiner and complement of the noun has been realized, but not the noun itself. The underscore marks the position where the noun would normally occur.

(32) a. ein interessantes _
an interesting
'an interesting one'

b. ein neues interessantes _
a new interesting
'a new interesting one'

c. ein interessantes _ aus Japan
an interesting from Japan
'an interesting one from Japan'

d. ein interessantes _, das wir kennen
an interesting that we know
'an interesting one that we know'

(33) a. (Nein, nicht der Vater von Klaus), der _ von Peter war gemeint.
no not the father of Klaus the of Peter was meant
'No, it wasn't the father of Klaus, but rather the one of Peter that was meant.'

b. (Nein, nicht das Bild von der Stadtautobahn), das _ vom
no not the picture of the motorway the of.the
Gleimtunnel war beeindruckend.
Gleimtunnel was impressive
'No, it wasn't the picture of the motorway, but rather the one of the Gleimtunnel that was impressive.'

c. (Nein, nicht das Kommen des Tischlers), das _ der Installateurin
no not the coming of.the carpenter the of.the plumber
ist wichtig.
is important
'No, it isn't the visit of the carpenter, but rather the visit of the plumber that is important.'

In English, the pronoun *one* must often be used in the corresponding position,[9] but in German the noun is simply omitted. In phrase structure grammars, this can be described by a so-called *epsilon production*. These rules replace a symbol with nothing (34a). The rule in (34b) is an equivalent variant which is responsible for the term *epsilon production*:

[9] See Fillmore et al. (2012: Section 4.12) for English examples without the pronoun *one*.

(34) a. $N \rightarrow$
b. $N \rightarrow \epsilon$

The corresponding trees are shown in Figure 3.5. Going back to boxes, the rules

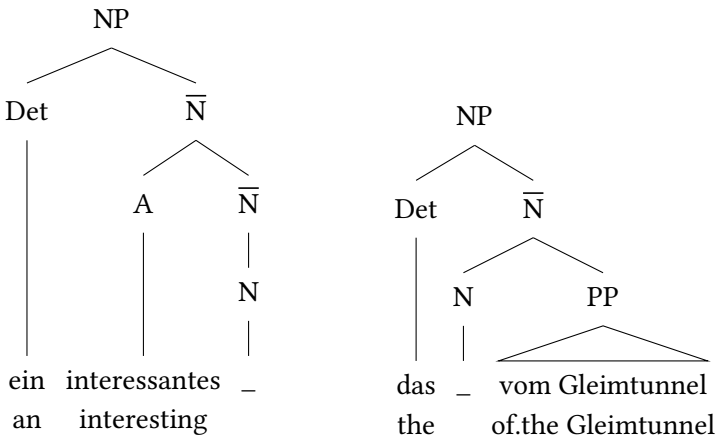

Figure 3.5: Noun phrases without an overt head

in (34) correspond to empty boxes with the same labels as the boxes of ordinary nouns. As we have considered previously, the actual content of the boxes is unimportant when considering the question of where we can incorporate them. In this way, the noun phrases in (18) can occur in the same sentences. The empty noun box also behaves like one with a genuine noun. If we do not open the empty box, we will not be able to ascertain the difference to a filled box.

It is not only possible to omit the noun from noun phrases, but the determiner can also remain unrealized in certain contexts. (35) shows noun phrases in plural:

(35) a. Bücher
books

b. Bücher, die wir kennen
books that we know

c. interessante Bücher
interesting books

d. interessante Bücher, die wir kennen
interesting books that we know

The determiner can also be omitted in singular if the noun denotes a mass noun:

(36) a. Getreide
grain

b. Getreide, das gerade gemahlen wurde
grain that just ground was
'grain that has just been ground'

c. frisches Getreide
fresh grain

d. frisches Getreide, das gerade gemahlen wurde
fresh grain that just ground was
'fresh grain that has just been ground'

Finally, both the determiner and the noun can be omitted:

(37) a. Ich lese interessante.
I read interesting
'I read interesting ones.'

b. Dort drüben steht frisches, das gerade gemahlen wurde.
there over stands fresh that just ground was
'Over there is some fresh (grain) that has just been ground.'

Figure 3.6 shows the corresponding trees.

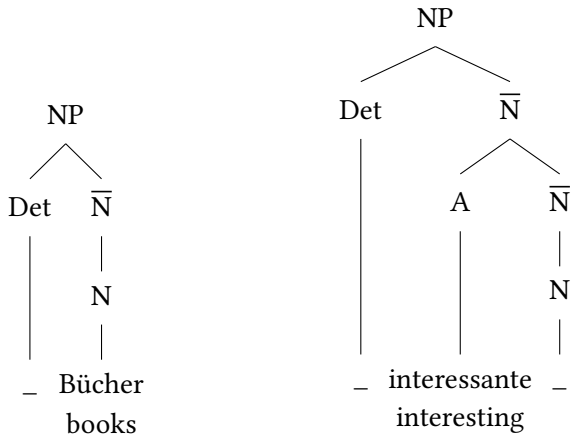

Figure 3.6: Noun phrases without overt determiner

It is necessary to add two further comments to the rules were developed up to this point: up to now, I have always spoken of adjectives. However, it is possible

to have very complex adjective phrases in pre-nominal position. These can be adjectives with complements (38a,b) or adjectival participles (38c,d):

(38) a. der seiner Frau treue Mann
the his.DAT wife faithful man
'the man faithful to his wife'

b. der auf seinen Sohn stolze Mann
the on his.ACC son proud man
'the man proud of his son'

c. der seine Frau liebende Mann
the his.ACC woman loving man
'the man who loves his wife'

d. der von seiner Frau geliebte Mann
the by his.DAT wife loved man
'the man loved by his wife'

Taking this into account, the rule (24b) has to be modified in the following way:

(39) $\overline{\text{N}} \rightarrow \text{AP}\ \overline{\text{N}}$

An adjective phrase (AP) can consist of an NP and an adjective, a PP and an adjective or just an adjective:

(40) a. $\text{AP} \rightarrow \text{NP A}$
b. $\text{AP} \rightarrow \text{PP A}$
c. $\text{AP} \rightarrow \text{A}$

There are two imperfections resulting from the rules were developed thus far. These are the rules for adjectives or nouns without complements in (40c) as well as (24c) – repeated here as (41):

(41) $\overline{\text{N}} \rightarrow \text{N}$

If we apply these rules, then we will generate unary branching subtrees, that is trees with a mother that only has one daughter. See Figure 3.6 for an example of this. If we maintain the parallel to the boxes, this would mean that there is a box which contains another box which is the one with the relevant content.

In principle, nothing stops us from placing this information directly into the larger box. Instead of the rules in (42), we will simply use the rules in (43):

(42) a. $\text{A} \rightarrow$ kluge

b. N → Mann

(43) a. AP → kluge
b. $\overline{\text{N}}$ → Mann

(43a) states that *kluge* 'smart' has the same properties as a full adjective phrase, in particular that it cannot be combined with a complement. This is parallel to the categorization of the pronoun *er* 'he' as an NP in the grammars (2) and (6).

Assigning $\overline{\text{N}}$ to nouns which do not require a complement has the advantage that we do not have to explain why the analysis in (44b) is possible as well as (44a) despite there not being any difference in meaning.

(44) a. [$_{\text{NP}}$ einige [$_{\overline{\text{N}}}$ kluge [$_{\overline{\text{N}}}$ [$_{\overline{\text{N}}}$ [$_{\text{N}}$ Frauen] und [$_{\overline{\text{N}}}$ [$_{\text{N}}$ Männer]]]]]]
some smart women and men

b. [$_{\text{NP}}$ einige [$_{\overline{\text{N}}}$ kluge [$_{\overline{\text{N}}}$ [$_{\text{N}}$ [$_{\text{N}}$ Frauen] und [$_{\text{N}}$ Männer]]]]]
some smart women and men

In (44a), two nouns have projected to $\overline{\text{N}}$ and have then been joined by coordination. The result of coordination of two constituents of the same category is always a new constituent with that category. In the case of (44a), this is also $\overline{\text{N}}$. This constituent is then combined with the adjective and the determiner. In (44b), the nouns themselves have been coordinated. The result of this is always another constituent which has the same category as its parts. In this case, this would be N. This N becomes $\overline{\text{N}}$ and is then combined with the adjective. If nouns which do not require complements were categorized as $\overline{\text{N}}$ rather than N, we would not have the problem of spurious ambiguities. The structure in (45) shows the only possible analysis.

(45) [$_{\text{NP}}$ einige [$_{\overline{\text{N}}}$ kluge [$_{\overline{\text{N}}}$ [$_{\overline{\text{N}}}$ Frauen] und [$_{\overline{\text{N}}}$ Männer]]]]
some smart women and men

3.3.2 Prepositional phrases

Compared to the syntax of noun phrases, the syntax of prepositional phrases (PPs) is relatively straightforward. PPs normally consist of a preposition and a noun phrase whose case is determined by that preposition. We can capture this with the following rule:

(46) PP → P NP

This rule must, of course, also contain information about the case of the NP. I have omitted this for ease of exposition as I did with the NP-rules and AP-rules above.

The Duden grammar (Eisenberg et al. 2005: §1300) offers examples such as those in (47), which show that certain prepositional phrases serve to further define the semantic contribution of the preposition by indicating some measurement, for example:

(47) a. [[Einen Schritt] vor dem Abgrund] blieb er stehen.
one step before the abyss remained he stand
'He stopped one step in front of the abyss.'

b. [[Kurz] nach dem Start] fiel die Klimaanlage aus.
shortly after the take.off fell the air.conditioning out
'Shortly after take off, the air conditioning stopped working.'

c. [[Schräg] hinter der Scheune] ist ein Weiher.
diagonally behind the barn is a pond
'There is a pond diagonally across from the barn.'

d. [[Mitten] im Urwald] stießen die Forscher auf einen alten
middle in.the jungle stumbled the researchers on an old
Tempel.
temple
'In the middle of the jungle, the researches came across an old temple.'

To analyze the sentences in (47a,b), one could propose the following rules in (48):

(48) a. PP → NP PP
b. PP → AP PP

These rules combine a PP with an indication of measurement. The resulting constituent is another PP. It is possible to use these rules to analyze prepositional phrases in (47a,b), but it unfortunately also allows us to analyze those in (49):

(49) a. * [$_{PP}$ einen Schritt [$_{PP}$ kurz [$_{PP}$ vor dem Abgrund]]]
one step shortly before the abyss

b. * [$_{PP}$ kurz [$_{PP}$ einen Schritt [$_{PP}$ vor dem Abgrund]]]
shortly one step before the abyss

Both rules in (48) were used to analyze the examples in (49). Since the symbol PP occurs on both the left and right-hand side of the rules, we can apply the rules in any order and as many times as we like.

We can avoid this undesired side-effect by reformulating the previously assumed rules:

(50) a. PP → NP $\overline{\text{P}}$
b. PP → AP $\overline{\text{P}}$
c. PP → $\overline{\text{P}}$
d. $\overline{\text{P}}$ → P NP

Rule (46) becomes (50d). The rule in (50c) states that a PP can consist of $\overline{\text{P}}$. Figure 3.7 shows the analysis of (51) using (50c) and (50d) as well as the analysis of an example with an adjective in the first position following the rules in (50b) and (50d):

(51) vor dem Abgrund
before the abyss
'in front of the abyss'

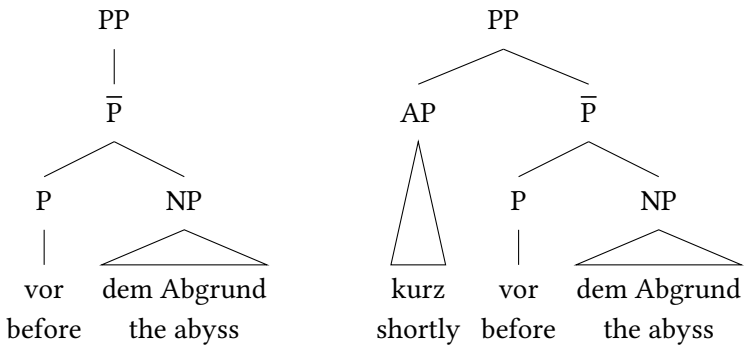

Figure 3.7: Prepositional phrases with and without measurement

At this point, the attentive reader is probably wondering why there is no empty measurement phrase in the left figure of Figure 3.7, which one might expect in analogy to the empty determiner in Figure 3.6. The reason for the empty determiner in Figure 3.6 is that the entire noun phrase without the determiner has a meaning similar to those with a determiner. The meaning normally contributed by the visible determiner has to somehow be incorporated in the structure of the noun phrase. This can be done by the empty determiner with an appropriately specified meaning contribution.

Unlike determiner-less NPs, prepositional phrases without an indication of degree or measurement do not lack any meaning component for composition. It

is therefore not necessary to assume an empty indication of measurement, which somehow contributes to the meaning of the entire PP. Hence, the rule in (50c) states that a prepositional phrase consists of $\overline{\text{P}}$, that is, a combination of P and NP.

3.4 $\overline{\text{X}}$ theory

If we look again at the rules that were formulated in the previous section, we see that heads are always combined with their complements to form a new constituent (52a,b), which can then be combined with further constituents (52c,d):

(52) a. $\overline{\text{N}} \rightarrow \text{N PP}$
b. $\overline{\text{P}} \rightarrow \text{P NP}$
c. $\text{NP} \rightarrow \text{Det } \overline{\text{N}}$
d. $\text{PP} \rightarrow \text{NP } \overline{\text{P}}$

Grammarians working on English noticed that parallel structures can be used for phrases which have adjectives or verbs as their head. I discuss adjective phrases at this point and postpone the discussion of verb phrases to Chapter 4, since the assumptions regarding the structure of clauses in both German and English deviate from $\overline{\text{X}}$ theory as it is commonly assumed today. As in German, certain adjectives in English can take complements with the important restriction that adjective phrases with complements cannot realize these pre-nominally in English. (53) gives some examples of adjective phrases:

(53) a. Kim and Sandy are proud.
b. Kim and Sandy are very proud.
c. Kim and Sandy are proud of their child.
d. Kim and Sandy are very proud of their child.

Unlike prepositional phrases, complements of adjectives are normally optional. *proud* can be used with or without a PP. The degree expression *very* is also optional.

The rules which we need for this analysis are given in (54), with the corre-

sponding structures in Figure 3.8.

(54) a. AP → $\overline{\text{A}}$
b. AP → AdvP $\overline{\text{A}}$
c. $\overline{\text{A}}$ → A PP
d. $\overline{\text{A}}$ → A

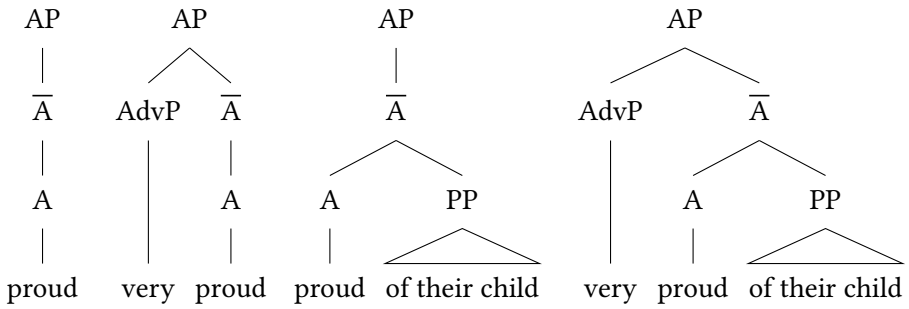

Figure 3.8: English adjective phrases

As was shown in Section 3.2, it is possible to generalize over very specific phrase structure rules and thereby arrive at more general rules. In this way, properties such as person, number and gender are no longer encoded in the category symbols, but rather only simple symbols such as NP, Det and N are used. It is only necessary to specify something about the values of a feature if it is relevant in the context of a given rule. We can take this abstraction a step further: instead of using explicit category symbols such as N, V, P and A for lexical categories and NP, VP, PP and AP for phrasal categories, one can simply use a variable for the word class in question and speak of X and XP.

This form of abstraction can be found in so-called $\overline{\text{X}}$ theory (or X-bar theory, the term *bar* refers to the line above the symbol), which was developed by Chomsky (1970) and refined by Jackendoff (1977). This form of abstract rules plays an important role in many different theories. For example: Government & Binding (Chomsky 1981), Generalized Phrase Structure Grammar (Gazdar et al. 1985; Uszkoreit 1987) and Lexical Functional Grammar (Bresnan 1982; Bresnan et al. 2016). In HPSG, the theory assumed in this book, $\overline{\text{X}}$ theory also plays a role, but not all restrictions of the $\overline{\text{X}}$ schema have been adopted.

(55) shows a possible instantiation of $\overline{\text{X}}$ rules, where the category X has been used in place of N, as well as examples of word strings which can be derived by these rules:

(55)

$\overline{X}$ rule	with specific categories	example strings
$\overline{\overline{X}} \rightarrow \overline{\text{specifier}}\ \overline{X}$	$\overline{\overline{N}} \rightarrow \overline{\text{DET}}\ \overline{N}$	the [picture of Paris]
$\overline{X} \rightarrow \overline{X}\ \overline{\text{adjunct}}$	$\overline{N} \rightarrow \overline{N}\ \overline{\text{REL\_CLAUSE}}$	[picture of Paris] [that everybody knows]
$\overline{X} \rightarrow \overline{\text{adjunct}}\ \overline{X}$	$\overline{N} \rightarrow \overline{A}\ \overline{N}$	beautiful [picture of Paris]
$\overline{X} \rightarrow X\ \overline{\text{complement}}*$	$\overline{N} \rightarrow N\ \overline{P}$	picture [of Paris]

Any word class can replace X (e.g., V, A or P). The X without the bar stands for a lexical item in the above rules. If one wants to make the bar level explicit, then it is possible to write X^0. Just as with the rule in (15), where we did not specify the case value of the determiner or the noun but rather simply required that the values on the right-hand side of the rule match, the rules in (55) require that the word class of an element on the right-hand side of the rule (X or $\overline{X}$) matches that of the element on the left-hand side of the rule ($\overline{X}$ or $\overline{\overline{X}}$).

A lexical element can be combined with all its complements. The '*' in the last rule stands for an unlimited amount of repetitions of the symbol it follows. A special case is zerofold occurrence of complements. There is no PP complement of *Bild* 'picture' present in *das Bild* 'the picture' and thus N becomes $\overline{N}$. The result of the combination of a lexical element with its complements is a new projection level of X: the projection level 1, which is marked by a bar. $\overline{X}$ can then be combined with adjuncts. These can occur to the left or right of $\overline{X}$. The result of this combination is still $\overline{X}$, that is the projection level is not changed by combining it with an adjunct. Maximal projections are marked by two bars. One can also write XP for a projection of X with two bars. An XP consists of a specifier and $\overline{X}$. Depending on one's theoretical assumptions, subjects of sentences (Haider 1995; 1997a; Berman 2003: Section 3.2.2) and determiners in NPs (Chomsky 1970: 210) are specifiers. Furthermore, degree modifiers (Chomsky 1970: 210) in adjective phrases and measurement indicators in prepositional phrases are also counted as specifiers.

Non-head positions can only host maximal projections and therefore complements, adjuncts and specifiers always have two bars. As already mentioned above, HPSG does not stick to the $\overline{X}$ theory. For example, arguments maybe words or intermediate, non-complete phrases (see Chapter 5 about the verbal complex in Germanic SOV languages). Figure 3.9 on the facing page gives an overview of the minimal and maximal structure of phrases.

Some categories do not have a specifier or have the option of having one. Adjuncts are optional and therefore not all structures have to contain an $\overline{X}$ with an adjunct daughter. In addition to the branching shown in the right-hand figure,

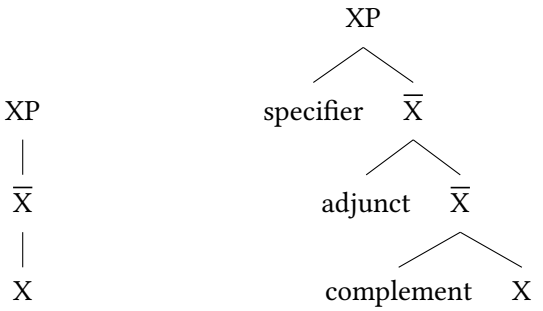

Figure 3.9: Minimal and maximal structure of phrases

adjuncts to XP and head-adjuncts are sometimes possible. There is only a single rule in (55) for cases in which a head precedes the complements, however an order in which the complement precedes the head is of course also possible. This is shown in Figure 3.9.

Figure 3.10 on the next page shows the analysis of the NP structures *das Bild* 'the picture' and *das schöne Bild von Paris* 'the beautiful picture of Paris'. The NP structures in Figure 3.10 and the tree for *proud* in Figure 3.8 show examples of minimally populated structures. The left tree in Figure 3.10 is also an example of a structure without an adjunct. The right-hand structure in Figure 3.10 is an example for the maximally populated structure: specifier, adjunct, and complement are present.

The analysis given in Figure 3.10 assumes that all non-heads in a rule are phrases. One therefore has to assume that there is a determiner phrase even if the determiner is not combined with other elements. The unary branching of determiners is not elegant but it is consistent.[10] The unary branchings for the NP *Paris* in Figure 3.10 may also seem somewhat odd, but they actually become more plausible when one considers more complex noun phrases:

(56) a. das Paris der dreißiger Jahre
the Paris of.the thirty years
'30's Paris'

b. die Maria aus Hamburg
the Maria from Hamburg
'Maria from Hamburg'

[10] For an alternative version of $\overline{X}$ theory which does not assume elaborate structure for determiners see Muysken (1982).

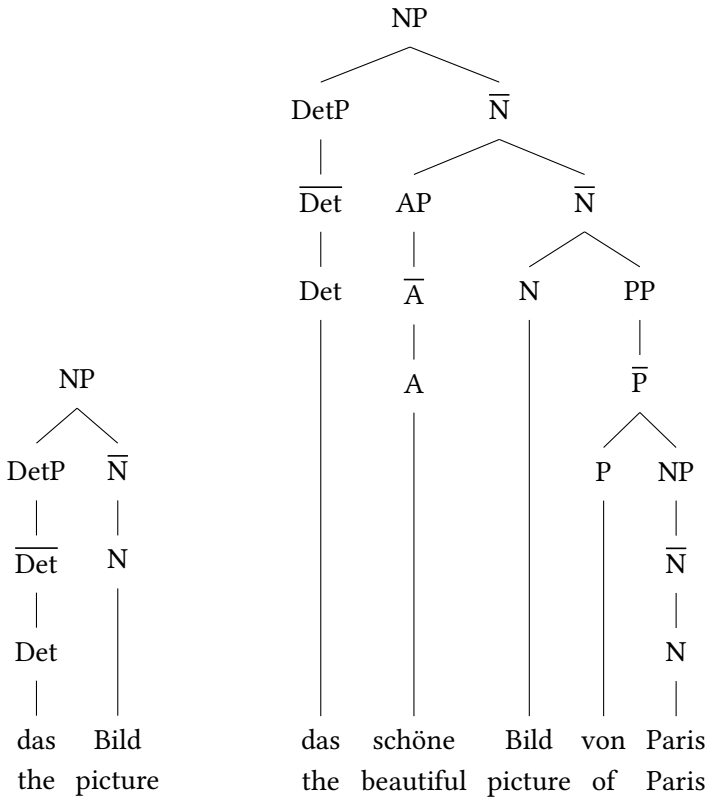

Figure 3.10: $\overline{\text{X}}$ analysis of *das Bild* 'the picture' and *das schöne Bild von Paris* 'the beautiful picture of Paris'

Unary projections are somewhat inelegant but this should not concern us too much here, as we have already seen in the discussion of the lexical entries in (43) that unary branching nodes can be avoided for the most part and that it is indeed desirable to avoid such structures. Otherwise, one gets spurious ambiguities. In the following chapters, I show how HPSG (light) can analyze determiners and noun, adjective, and verb phrases without assuming unary rules. So instead of assuming the structures in Figure 3.10, the much simpler ones in Figure 3.11 will be used.

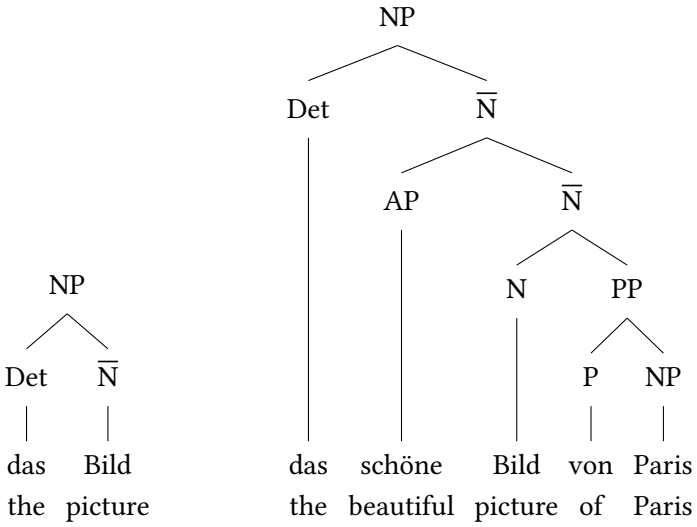

Figure 3.11: HPSG analysis of *das Bild* 'the picture' and *das schöne Bild von Paris* 'the beautiful picture of Paris'

Comprehension questions

1. Why are phrase structure grammars that use only atomic categories inadequate for the description of natural languages?

2. Assuming the grammar in (6), state which steps (replacing symbols) one has to take to get to the symbol V in the sentence (57).

   (57) er das Buch dem Kind gibt
   he the book the child gives
   'He gives the book to the child.'

   Your answer should resemble the analysis in (3).

Exercises

This chapter is in large part identical to Chapter 2 of Müller (2020). Since the focus of this book is different from the textbook about grammatical theory, I decided to provide a different set of exercises here. Those who are interested in doing more exercises may consult the grammatical theory text book in addition. It is published by Language Science Press and hence open access, that is, it is freely available.

1. Draw trees for the following phrases. You may use the symbol NP for proper names and $\overline{\text{N}}$ for nouns not requiring complements (as in Figure 3.11).

   (58) a. eine Stunde vor der Ankunft des Zuges
   one hour before the arrival of.the train
   'one hour before the arrival of the train'

   b. kurz nach der Ankunft in Paris
   shortly after the arrival in Paris
   'shortly after the arrival in Paris'

   c. das ein Lied singende Kind aus dem Allgäu
   this a song singing child from the Allgäu
   'the child from the Allgäu singing a song'

2. Use the online version of SWI-Prolog[a] to test your grammar using a computer. Details regarding the notation can be found in the English Wikipedia entry for Definite Clause Grammar (DCG).[b]

[a] https://swish.swi-prolog.org/, 2020-06-07.
[b] https://en.wikipedia.org/wiki/Definite_clause_grammar, 2020-06-07.

Further reading

The expansion of phrase structure grammars to include features was proposed as early as 1963 by Harman (1963).

The phrase structure grammar for noun phrases discussed in this chapter covers a large part of the syntax of noun phrases but cannot explain certain NP structures. Furthermore, it has the problem, which exercise 3 of Müller (2020: Chapter 2) is designed to show. A discussion of these phenomena and a solution in the framework of HPSG can be found in Netter (1998) and Kiss (2005).

The discussion of the integration of semantic information into phrase structure grammars was very short. A detailed discussion of predicate logic and its integration into phrase structure grammars – as well as a discussion of quantifier scope – can be found in Blackburn & Bos (2005).

4 Valence, argument order and adjunct placement

This chapter deals with the representation of valency information and sketches the basic structures that are assumed for SVO and SOV languages. I provide an account for scrambling in those languages that allow for it and discuss the fixed vs. free position of adjuncts.

4.1 Valence representations

The word sequences in (1) were already discussed in footnote 3 on page 36.

(1) a. * der Delphin erwartet
the.NOM dolphin expects

b. * des Kindes der Delphin den Ball dem Kind gibt
the.GEN child.GEN the.NOM dolphin the.ACC ball the.DAT child gives

The problem is that there are too few (1a) or too many NPs (1b) present. The concept that is needed here is valence: like in chemistry it is assumed that heads have a certain potential to enter into stable relations with other material (Tesnière 2015: 239). For example, the verb *erwarten* 'to expect' requires an NP in the nominative and one in the accusative. *geben* 'to give' is the prototypical ditransitive verb: it can be combined with an NP in the nominative, an NP in the dative and an NP in the accusative, but as (1b) shows, a genitive object could not be integrated into a sentence.

The NPs in the examples in (2) are arguments of the respective verbs:

(2) a. [dass] der Delphin den Menschen erwartet
that the.NOM dolphin den.ACC human expects
'that the dolphin expects the human'

b. [dass] der Delphin dem Kind den Ball gibt
that the.NOM dolphin the.DAT child the.ACC ball gives
'that the dolphin gives the child the ball'

Most syntactic arguments also fill a so-called *semantic role* in the semantic representation of the head. For example, the dolphin is the giver, the child is the recipient, and the ball is the item given. Tesnière (2015: Chapter 48) suggested using the analogy of dramas for the explanation of valence: if we imagine the scene of giving, what has to happen on stage to call an event that is acted out a giving event? There have to be the three participants, a giver, a recipient and something that is given. Without these participants, we do not have a proper giving event.

In addition to elements like the NPs in the examples above, which are called arguments, there are also so-called adjuncts. *schnell* 'quickly' and *quickly* are examples for adjuncts:

(3) a. [dass] der Delphin dem Kind schnell den Ball gibt
that the.NOM dolphin the.DAT child quickly the.ACC ball gives
'that the dolphin gives the child the ball quickly'

b. that the dolphin gives the child the ball quickly

The adverbials provide additional information about the giving event, but they do not fill a semantic role.

To make things complicated not all arguments have to be realized in a sentence. The ditransitive verb *geben* can be realized with any subset of its arguments, provided the context fills in the missing information.

(4) a. Sie gibt Geld.
she gives money
'She gives money.'

b. Sie gibt den Armen.
she gives the poor
'She gives to the poor.'

c. Sie gibt.
she gives

d. Gib!
give

In the case of (4a), a certain charity setting could have been established and one can either donate food or money or contribute some voluntary work. In such a situation, (4a) is perfectly fine. The transfered object in (4b) is probably money. A possible context for (4c) and (4d) is the card game skat where the person who deals out is rotating among the players. (4d) is an imperative. Even subjects can

be dropped in imperatives since the referent of the subject is obvious: it is the addressee of the utterance.

The examples in (4) show that the arguments of *geben* 'to give' may be omitted. This is not the case for the accusative object of *erwarten* 'to expect': it is obligatory. So arguments may be optional or obligatory, but adjuncts are always optional. While the number of argument is limited (by the number of available slots), the number of adjuncts is not: there can be arbitrarily many adjuncts in a phrase. (5) shows an example with two adjuncts:

(5) [dass] der Delphin jetzt dem Kind schnell den Ball gibt
that the.NOM dolphin now the.DAT child quickly the.ACC ball gives
'that the dolphin now gives the child the ball quickly'

The analogy to chemistry and drama may be confusing since H_2O is a very nice and stable molecule and it is helpful to imagine the parallel combination of a verb with its two arguments. Figure 4.1 shows H_2O and the parallel combination of a verb with its arguments corresponding to (6a). The problem is that a single H and an O do not form a stable combination, while (6b) is fine:

(6) a. Kirby helps Sandy.
b. Kirby helps.

Figure 4.1: Combination of hydrogen and oxygen and the combination of a verb with its arguments

Of course one can simply assume that there is a version of *helps* that has a valence different from the two-place valence usually assumed. Here is were the parallel breaks down since we do not have an oxygen atom with just one open slot for the hydrogen atom. The drama analogy adds to the confusion since the helping event described in (6b) of course involves somebody who is helped. The solution to this problem is to distinguish between syntactic and semantic valence. The drama analogy helps us to find the semantic valence, the chemistry analogy is more about syntactic valence.

Given that chemistry and drama have their problems, we may go for another analogy: food. Let's assume you want to prepare a meal with pasta, tofu and a

tomato sauce. For the tomato sauce you also need some onions. You put all the ingredients onto a shopping list and go to the shop. Once in the shop you realize that they run out of tofu. Your meal will work without tofu. Tofu is optional. Fortunately, the shop has plenty of pasta. You may choose between the different types and select the pasta type and brand you prefer. Some onions, tomatoes and your done. Wait, next to the cashier there are these gummy bears. OK, you take some of these as well although you did not want to and they have nothing to do with your meal and your shopping list. The gummy bears are the adjuncts.

Back to linguistics: there are two ways of ensuring that arguments are realized together with their heads. The first one uses techniques that were introduced in Chapter 3. If one uses flat phrase structure rules, one can make sure that certain arguments appear together with certain heads. A schema similar to the one in (7) was discussed as (17) on page 41.

(7) S → NP[*nom*] NP[*dat*] NP[*acc*] V[*ditransitive*]

Such schemata have been used in Generalized Phrase Structure Grammar (Gazdar, Klein, Pullum & Sag 1985; Uszkoreit 1987), but they were abandoned later in favor of lexicalist models, that is, models assuming that information about arguments of a head is encoded in the lexical description of the head rather than in phrase structure rules (Jacobson 1987; Müller 2016: Section 5.5; Müller & Wechsler 2014a). Reasons for abandoning the phrasal approach of GPSG were problems with so-called partial verb phrase frontings (Nerbonne 1986; Johnson 1986) and with accounting for interactions with morphology (Müller 2016: Section 5.5.1).[1]

In lexical approaches, the valence of a head is represented in its lexical entry in the form of a list with descriptions of the elements that belong to the head's valence. (8) provides some prototypical examples:

[1]Starting with influential work by Adele Goldberg (1995) in the framework of Construction Grammar, the phrasal approaches had a revival (Goldberg & Jackendoff 2004). Phrasal approaches are wide-spread and also assumed in other frameworks Haugereid 2007; 2009; Culicover & Jackendoff 2005; Alsina 1996; Christie 2010; Asudeh et al. 2008; 2013. The problems that lead to the abandonment of GPSG are ignored in the literature and newly introduced ones are not properly addressed. See Müller 2006; 2010; 2013c; Müller & Wechsler 2014a,b; Müller 2017; 2018; 2019; 2020; 2021c for some discussion. Note that there are also lexical variants of Construction Grammar. Sag, Boas & Kay (2012), introducing Sign-Based Construction Grammar, explicitly argue for a lexical view citing some of the references just given. I am working in the framework of Constructional HPSG (Sag 1997), which is also underlying the proposals sketched in this book.

(8) a. *schläft* 'sleeps': ⟨ NP[*nom*] ⟩
b. *kennt* 'knows': ⟨ NP[*nom*], NP[*acc*] ⟩
c. *hilft* 'helps': ⟨ NP[*nom*], NP[*dat*] ⟩
d. *gibt* 'gives': ⟨ NP[*nom*], NP[*dat*], NP[*acc*] ⟩
e. *wartet* 'waits': ⟨ NP[*nom*], PP[*auf*] ⟩

The elements in such lists come with a fixed order. The order corresponds to the order of the elements in English and to the so-called unmarked order in German, that is, for ditransitive verbs the order is usually nom, dat, acc (see Höhle (1982) for comments on the unmarked order). This fixed order is needed for establishing the link between syntax and semantics. This will be briefly discussed in Section 4.8.

Given such a valence representation for a verb like *kennen* 'know', one can assume a schema that combines an element from the valence list with the respective head and passes all unsaturated elements on to the result of the combination. The first step of the analysis of (9) is provided in Figure 4.2.[2]

(9) [dass] niemand ihn kennt
that nobody.NOM him.ACC knows
'that nobody knows him'

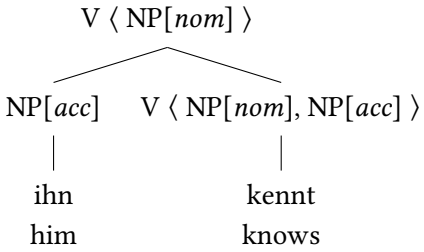

Figure 4.2: Analysis of *ihn kennt* 'him knows', valence information is represented in a list

The lexical item for *kennt* 'knows' has a valence description containing two NPs. In a first step *kennt* is combined with its accusative object. The resulting phrase *ihn kennt* 'him knows' is something whose most importent constituent is a verb.

[2]Note that this sounds as if there were an order in which things have to be combined. This is not the case. HPSG grammars are sets of constraints that can be applied in any order. It is for explanatory purposes only that analyses are explained in a bottom up fashion throughout the book.

Therefore it has V as its category label. Certain important properties of linguistic objects are called *head features*. Part of speech is one of these properties. It is assumed that all head features are passed up from the head in the tree automatically.

The element that is not yet combined with *kennt* 'knows' is the NP[*nom*]. It is still represented in the valence list of *ihn kennt* 'him knows'. Figure 4.3 shows the next step combining *ihn kennt* with the subject *niemand* 'nobody'. The result is

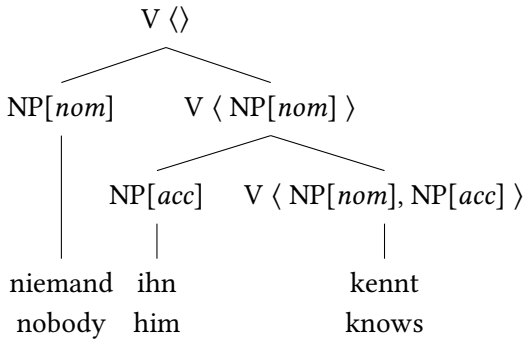

Figure 4.3: Analysis of (*dass*) *niemand ihn kennt* 'that nobody knows him'

a linguistic object of category verb with the empty list as valence representation.

As will be shown shortly, the schema that licenses structures like the V ⟨⟩ and V ⟨ NP[*nom*] ⟩ in Figure 4.3 is a more abstract version of the rule in (6) on page 36.

It is probably helpful to return to our meal-shopping analogy. Assume we are using an app to organize our shopping lists. For our current meal we need pasta and tomatoes. They are listed in the app in a certain order (tomatoes, pasta) and there are little images attached to the products. Once we found something matching the pasta, we remove the pasta from the list and the remaining list contains an icon reminding us of the tomatoes. Once we have those, we remove them from the list and since nothing is left on the list, we pay. Linguistic structures are similar: we start with a verb selecting two NPs, we combine it with one NP and then with the second one. The result is a complete structure, something with an empty valence list.

There are various ways to deal with optional arguments. The most simple one is to assume further lexical items selecting fewer arguments. For the example in (4c) one would assume the valence representation in (10a) and for sentences with *warten* 'to wait' without prepositional object, one would assume (10b) in addition to the representations in (8):

(10) a. *gibt* 'gives': ⟨ NP[*nom*] ⟩
b. *wartet* 'waits': ⟨ NP[*nom*] ⟩

4.2 Scrambling

As we already saw in the data discussion in Chapter 2.3, some languages allow for scrambling of arguments. For those languages one can assume that heads can combine with any of its arguments not necessarily beginning with the last one as it was the case in the analysis in Figure 4.3. Figure 4.4 shows the analysis of (11).

(11) [dass] ihn niemand kennt
that him.ACC nobody.NOM knows
'that nobody knows him'

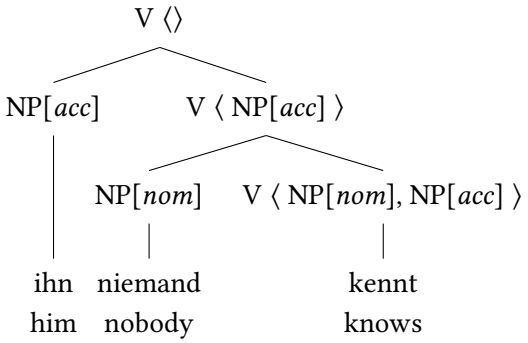

Figure 4.4: Analysis of (*dass*) *ihn niemand kennt* 'that nobody knows him', languages that allow for scrambling permit the saturation of arguments in any order

Rather than combining the verb with the accusative argument (the object) first, it is combined with the nominative (the subject) and the accusative (the object) is added in a later step.

4.3 SVO: Languages with fixed SV order and valence features

The last section demonstrated how verb-final sentences in German can be analyzed. Of course it is easy to imagine how this extends to VSO languages: The

head is initial and combines with the first element in the valence list first and then with all the other elements. However, nothing has been said about the SVO languages so far. In languages like Danish, English, and so on all objects are realized after the verb as in (12), it is just the subject that preceedes the verb.

(12) Kim gave Sandy the book.

The verb together with its objects forms a unit in a certain sense: it can be fronted (13a). It can be selected by dominating verbs (13b), it can be coordinated (13c), and it is the place where adjuncts attach to (13d–e).

(13) a. John promised to read the book and [read the book], he will.
b. He will [read the book].
c. Kim [[sold the car] and [bought a bicycle]].
d. He often [reads the book].
e. … [often [read the book] slowly], he will.

This can be modeled adequately by assuming two valence lists: one for the complements (COMPS short for COMPLEMENTS) and one for the subject. The list for the subject is called SPECIFIER list (SPR).[3] The specifier list plays a role both in the analysis of sentences and in the analysis of noun phrases. Nouns select their determiner via SPR and all their other arguments via COMPS. Figure 4.5 on the facing page shows the analysis of the sentence (14) using the features SPR and COMPS.

(14) Nobody knows him.

The COMPS list of *knows* contains a description of the accusative object and the accusative *him* is combined in a first step with *knows*. In addition to the accusative object *knows* selects for a subject. This selection is passed on to the mother node,

[3] There are various versions of HPSG: Pollard & Sag (1987: Chapter 3.2) assumed that all arguments of a head are represented in one list. This list was called SUBCAT list. Borsley (1987) argued that one should use several valence features (SUBJ, SPR, and COMPS) and this was adopted in Pollard & Sag (1994: Chapter 9): subjects of verbs were selected via SUBJ and determiners via SPR. Sag, Wasow & Bender (2003: Chapter 4.3) assume that both subjects and determiners are selected via SPR, which is what is assumed in the grammars developed here too. Sag (2012: Section 3.3) presents a versions of HPSG called Sign-Based Construction Grammar (SBCG) which assumes one valence list for all arguments a it was common in 1987. This return to an abandoned approach came without any argumentation. Hence, I do not adopt this variant of HPSG but stick to the separation of subjects and other arguments to SPR and COMPS. I will not use SUBJ as a valence feature, but it will be introduced in the analysis of verbal complexes in Chapter 5.

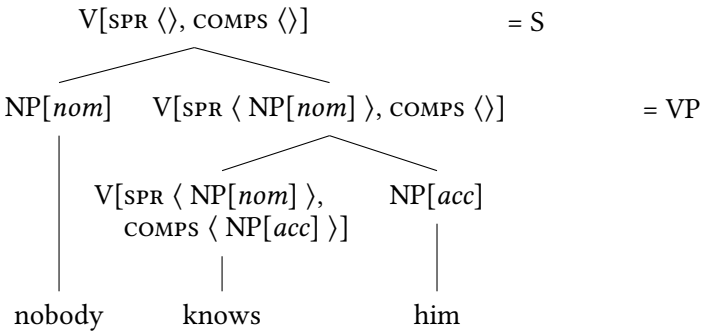

Figure 4.5: Analysis of the SVO order with two separate valence features

the VP. Hence, the SPR value of *knows him* is identical to the SPR value of *knows*. The VP *knows him* selects for a nominative NP. This NP is realized as *nobody* in Figure 4.5. The result of the combination of *knows him* with *nobody* is *nobody knows him*, which is complete: It has both an empty SPR list and an empty COMPS list. The two rules that are responsible for the combinations in Figure 4.5 are called the Specifier-Head Schema and the Head-Complement Schema. I use VP as abbreviation for something with a verbal head and an empty COMPS list and at least one element in the SPR list and S as abbreviation for something with a verbal head and empty lists for both the SPR and the COMPS value.

In Section 4.2 it was explained how scrambling can be accounted for: the rules that combine heads with their arguments can take the arguments from the list in any order. For languages with stricter constituent order requirements the rules are stricter: the arguments have to be taken off the list consistently from the beginning or from the end. So for English and Danish one starts at the beginning of the list and for head-final languages without scrambling one starts at the end of the list. Figure 4.6 shows the analysis of a sentence with a ditransitive verb. The accusative object is the first element in the COMPS list and it is combined with the verb first. The result of the combination is a verbal projection that has the PP[*to*] as the sole element in the COMPS list. It is combined with an appropriate PP in the next step resulting in a verbal projection that has an empty COMPS list (a VP).

The analysis of our first German example in Figure 4.3 did not use a name for the valence list. So the question is: How does the analysis of German relate to the analysis of English using SPR and COMPS. A lot of researchers from various frameworks argued that it is not useful to distinguish the subjects of finite

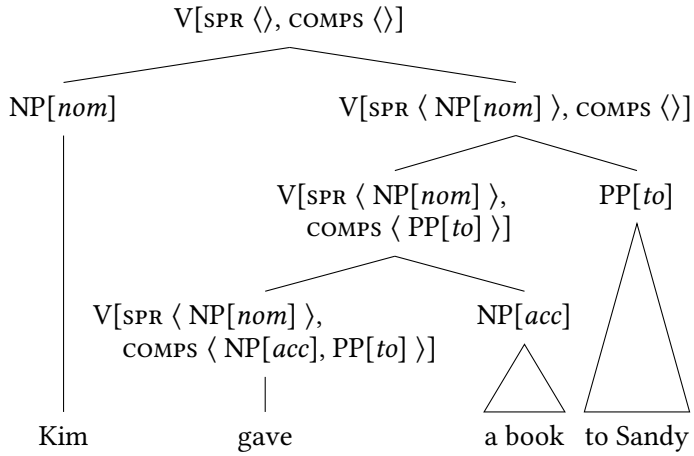

Figure 4.6: Analysis of the SVO order with two separate valence features and two elements in COMPS

verbs from other arguments. All the tests that have been used to show that subjects in English differ from complements do not apply to the arguments of finite verbs in German. Hence, researchers like Pollard (1996), Haider (1993), Eisenberg (1994: 376), and Kiss (1995) argued for so-called subject as complement analyses.Figure 4.7 on the next page shows the adapted analysis of (9) – repeated here as (15):

(15) [dass] niemand ihn kennt
that nobody.NOM him.ACC knows
'that nobody knows him'

The difference between German and English is that German contains all arguments in the COMPS list of the finite verb and no arguments in the SPR list. Since the elements in the COMPS list can be combined with the head in any order, it is explained why all permutations of arguments are possible. Specifiers are realized to the left of their head. This is the same for German and English. For German this is not relevant in the verbal domain, but the Specifier-Head Schema, which is introduced shortly, is used in the analysis of noun phrases.

Throughout the remainder of this book I use the abbreviations in Table 4.1 on the facing page.

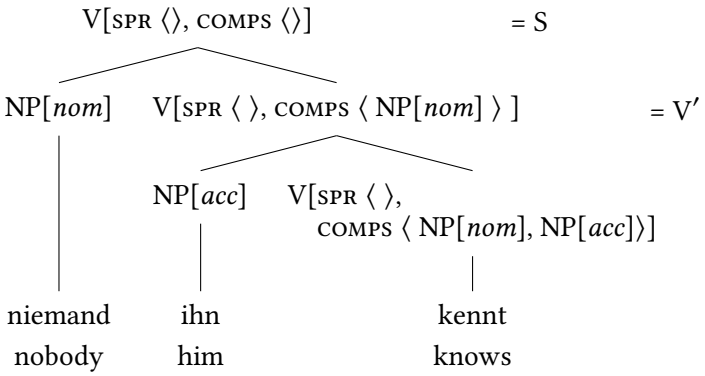

Figure 4.7: The analysis of a German sentence with SPR and COMPS list

Table 4.1: Abbreviations for S, VP, and V′ and NP, N′

S	= V[SPR ⟨⟩, COMPS ⟨⟩]
VP	= V[SPR ⟨ NP[*nom*] ⟩, COMPS ⟨⟩]
V′	= all other V projections apart from verbal complexes
NP	= N[SPR ⟨⟩, COMPS ⟨⟩]
N′	= N[SPR ⟨ DET ⟩, COMPS ⟨⟩]

4.4 Immediate dominance schemata

In Section 4.1 I already mentioned that the non-terminal nodes in a tree, that is, the nodes that are not the leaves of the tree, are licensed by schemata similar to those introduced in Chapter 3.2 and 3.4. In fact, the schemata are even more abstract than $\overline{\text{X}}$ schemata since they do not make any statements about linear order of the daughters. The two schemata discussed in this section are sketched here as (16):

(16) Specifier-Head Schema and Head-Complement Schema (preliminary)
H[SPR 1] → H[SPR 1 ⊕ ⟨ 2 ⟩, COMPS ⟨⟩] 2
H[COMPS 1] → H[COMPS ⟨ 2 ⟩ ⊕ 1] 2

Syntactic rules are usually called schemata since they are rather abstract. The details about such schemata are given in more formal HPSG literature like Müller (2013b: Chapter 4) or **AB2021a**, but Figure 4.8 on the next page and Figure 4.11 on page 76 provide the respective tree representations. The H stands for *head*. The term *head daughter* is used for the daughter that either is the head of a phrase or

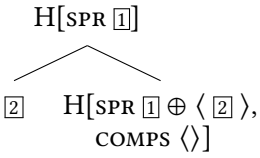

Figure 4.8: Sketch of the Specifier-Head Schema (preliminary)

contains the head of the phrase (e.g., the verb in a sentence or the noun in a noun phrase). *append* (⊕) is a relation that concatenates two lists. For instance the concatenation of ⟨ a ⟩ and ⟨ b ⟩ is ⟨ a, b ⟩. The concatenation of the empty list ⟨⟩ with another list yields the latter list. To give some examples that are of relevance in this chapter consider the list ⟨ NP[*nom*], NP[*dat*], NP[*acc*] ⟩. *append* can be used to append two lists resulting in our list in the following ways:

(17) a. ⟨⟩ ⊕ ⟨ NP[*nom*], NP[*dat*], NP[*acc*] ⟩ = ⟨ NP[*nom*], NP[*dat*], NP[*acc*] ⟩
b. ⟨ NP[*nom*] ⟩ ⊕ ⟨ NP[*dat*], NP[*acc*] ⟩ = ⟨ NP[*nom*], NP[*dat*], NP[*acc*] ⟩
c. ⟨ NP[*nom*], NP[*dat*] ⟩ ⊕ ⟨ NP[*acc*] ⟩ = ⟨ NP[*nom*], NP[*dat*], NP[*acc*] ⟩
d. ⟨ NP[*nom*], NP[*dat*], NP[*acc*] ⟩ ⊕ ⟨⟩ = ⟨ NP[*nom*], NP[*dat*], NP[*acc*] ⟩

The schema in Figure 4.8 takes a list apart in such a way that a list with a singleton element (⟨ 2 ⟩) and a remaining list (1) results. Assuming the three-element list with nom, dat and acc elements, this would be the case in (17c) and 2 would be NP[*acc*] and 1 would be ⟨ NP[*nom*], NP[*dat*] ⟩. In this book, the SPR list has at most one element.[4] It can be an NP[*nom*] in the case of verbs in the SVO languages or the determiner, if the head is a noun. If one splits a list with a singleton element into a list containing one element and a rest, the rest will always be the empty list. Hence, with the lists at the right-hand side of the equations in (18), 1 will be the empty list and 2 will be NP[*nom*] and Det, respectively.

(18) a. ⟨⟩ ⊕ ⟨ NP[*nom*] ⟩ = ⟨ NP[*nom*] ⟩
b. ⟨⟩ ⊕ ⟨ DET ⟩ = ⟨ DET ⟩

For a schema like the one in Figure 4.8 to apply, the descriptions of the daughters have to match the actual daughters. For instance *sleeps* is compatible with the right daughter: it has an NP[*nom*] in its SPR list. When *sleeps* is realized as a daughter of the schema in Figure 4.8, 2 is instantiated as NP[*nom*]. Therefore

[4] But see Müller & Ørsnes (2013b) for an analysis of object shift in Danish assuming multiple elements in the SPR list.

the left daughter has to be compatible with an NP[*nom*]. It can be realized as a simple pronoun like *she* or a complex NP like *the brown squirrel*. Two analyses are shown in Figure 4.9. The 1 in Figure 4.9 says that whatever is in the SPR list is

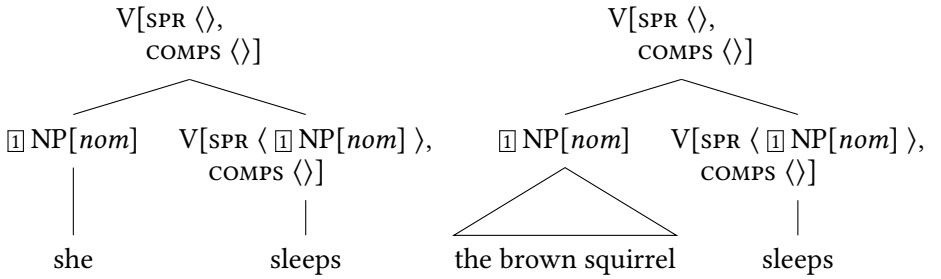

Figure 4.9: Head-Specifier phrases with a subject and an intransitive verb

identified with whatever is the other element in the tree. I wrote down NP[*nom*] following the 1 in both the NP node and within the SPR list, but it would have been sufficient to mention NP[*nom*] at one of the two places. The actual number in the box does not matter. What matters is where the same number appears in the trees or structures. I usually start with 1 at the top of the tree and use consecutive number for the following sharings.

Figure 4.12 on p. 77 below shows an example analysis with a ditransitive verb also involving the Specifier-Head Schema. The specification of the COMPS value of the head daughter in the Specifier-Head Schema ensures that the verb is combined with its complements before the specifier is added.

Apart from its use for the analysis of subject–VP combinations in the SVO languages, the Specifier-Head Schema is also used for the analysis of NPs in all the Germanic languages. Figure 4.10 shows the analysis of the NP *the squirrel*. *squirrel* selects for a determiner and the result of combining *squirrel* with a de-

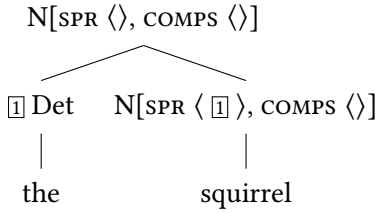

Figure 4.10: Analysis of the NP *the squirrel*

terminer is a complete nominal projection, that is, an NP. There are also nouns like *picture* that take a complement:

(19) a picture of Kim

The combination of *picture* and its complement *of Kim* is parallel to the combination of a verb with its object in VO languages with fixed constituent order. For such combinations we need a separate schema: the Head-Complement Schema, which is given in Figure 4.11. The schema splits the COMPS list of a head into an

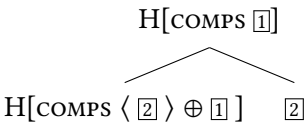

Figure 4.11: Sketch of the Head-Complement Schema (preliminary)

initial list with one element (2), which is realized as the complement daughter to the right.[5] This schema licenses both the combination of *gave* and *the child* and the combination of *gave the child* and *a book* in Figure 4.12 on the facing page, which shows the analysis of (20).[6]

(20) Nobody gave the child a book.

To keep things simple, the Specifier-Head Schema did not mention the COMPS value of the mother. The Head-Complement Schema did neither mention the SPR value of the head daughter nor the one of the mother. But the respective values are important, since something has to be said about these values in structures that are licensed by these schemata. If the SPR value in the combination of *gave* and *the child* would not be constrained by the Head-Complement Schema, an value would be possible. This includes a SPR list containing two genitive NPs and an accusative NP. Sequences like (21) would be licensed:

(21) * his his him gave the child a book

[5] In principle daughters are unordered in HPSG as they were in GPSG (Gazdar et al. 1985). Special linearization rules are used to order a head with respect to its siblings in a local tree. So a schema licensing a tree like the one in Figure 4.11 would also license a tree with the daughters in a different order unless one had linearization rules that rule this out. See Müller (2021a) for an overview of approaches to constituent order in HPSG. Linear precedence rules are discussed in more detail in Section 4.6.

[6] English nouns and determiners do not inflect for case. However, case is manifested at pronouns: *he* (nominative), *his* (genitive), *him* (accusative). Hence, verbs in double object constructions select for two accusatives rather than for dative and accusative as in German.

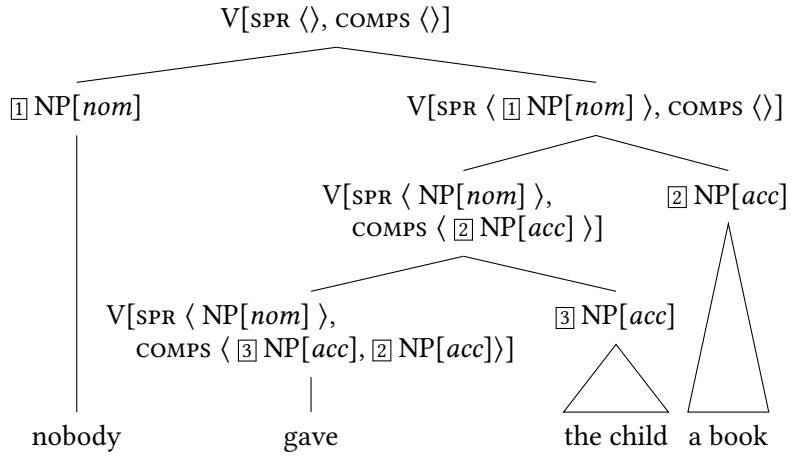

Figure 4.12: Analysis of the sentences with a ditransitive verb

To avoid such unspecified SPR values, the SPR value of the head daughter is identified with the SPR value of the mother node in the schema. This is the 1 in (22b). Similarly, the COMPS value of the mother in Specifier-Head phrases has to be specified to be identical to the COMPS value of the head daughter (2 in (22a)) and hence the empty list.

(22) Specifier-Head Schema and Head-Complement Schema (final)
a. H[SPR 1, COMPS 2] → H[SPR 1 ⊕ ⟨ 3 ⟩, COMPS 2 ⟨⟩] 3
b. H[SPR 1, COMPS 2] → H[SPR 1, COMPS 2 ⊕ ⟨ 3 ⟩] 3

Figure 4.13 shows the final versions of the two schemata.

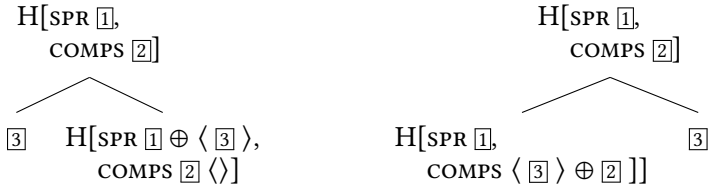

Figure 4.13: Sketch of the Specifier-Head and Head-Complement Schema

4.5 Scrambling and free VO/OV order

Now, in order to analyze languages with free constituent order, we need a more liberal variant of the schema in Figure 4.11. Figure 4.14 splits the COMPS list of a head into three parts: a list 1, a list containing exactly one element ⟨ 3 ⟩ and a third list 2. The element of the second list is realized as the complement of the head. The length of the lists 1 and 2 is not restricted. For our example list

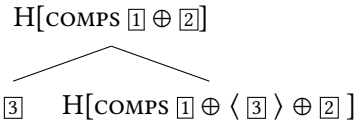

Figure 4.14: Sketch of the Head-Complement Schema for languages with free constituent order

containing a nom, a dat and an acc element, there are the following possibilities to split the list:

(23) a. ⟨⟩ ⊕ ⟨ NP[*nom*] ⟩ ⊕ ⟨ NP[*dat*], NP[*acc*] ⟩
b. ⟨ NP[*nom*] ⟩ ⊕ ⟨ NP[*dat*] ⟩ ⊕ ⟨ NP[*acc*] ⟩
c. ⟨ NP[*nom*], NP[*dat*] ⟩ ⊕ ⟨ NP[*acc*] ⟩ ⊕ ⟨⟩

So 3 in Figure 4.14 would be NP[*nom*] in (23a), NP[*dat*] in (23b) and NP[*acc*] in (23c).

If one restricts 1 to be the empty list, one gets grammars that saturate complements from the beginning of the list (VO languages with fixed order like English) and if one restricts 2 to be the empty list, one gets grammars that take the last element from the COMPS list for combination with a head (this would be an OV languages with fixed order, if such a language would exist). Scrambling languages like German allow any complement to be combined with its head since there is neither a restriction on 1 nor one on 2.

4.6 Linear precedence rules

The abstract schemata are similar to the schemata that we gained by abstracting over simple phrase structure rules in Chapter 3. They are similar to abstract $\overline{\text{X}}$ rules. However, there is an important difference: the elements at the right-hand side of a rule and the daughters in the corresponding treelets in the figures

visualizing the schemata are not ordered. This means that a schema like the one in (24) can be used to analyze configurations with a preceeding b and with b preceeding a.

(24) m → a b

As will be shown shortly, this comes handy in situations in which one wants to leave the actual order underspecified.

For the Head Complement Schema discussed above this means that actually two orders can be analyzed: head-daughter before complement and complement before head-daughter. Hence the Head-Complement Schema is general enough to analyze the German and English phrases in (25):

(25) a. dem Kind ein Buch gibt
the child the book gives
b. gives the child the book

But such a general schema without restrictions would also allow an analysis for (26b) and (26c):

(26) a. [dass] niemand dem Kind ein Buch vorliest
that nobody the child a book PART.reads
'that nobody reads a book to the child'
b. * [dass] dem Kind niemand vorliest ein Buch
that the child nobody PART.reads a book
c. * [dass] niemand vorliest dem Kind ein Buch
that nobody PART.reads the child a book

The structures licensed by the Head-Complement Schema without any restrictions are shown in the Figures 4.15 and 4.16 on the next page

Now, this problem is easy to fix: what is needed is binary feature specifying whether a head is initial or not. The feature is called INITIAL (abbreviated as INI). All head-daughters that are INI+ are always serialized to the left of their complement and all those that are INI− are serialized to the right. The linearization rules are provided in (27):

(27) a. HEAD [INITIAL+] < COMPLEMENT
b. COMPLEMENT < HEAD [INITIAL−]

German verbs are specified to be INITIAL−, while English verbs are INITIAL+. Because of this specification and the linearization rules in (27), verbs are always

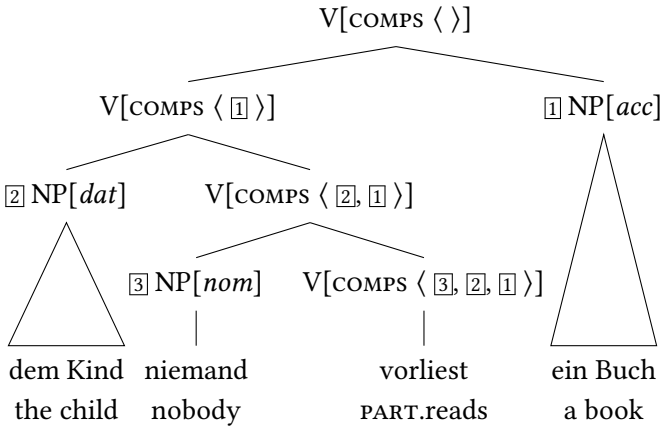

Figure 4.15: Unwanted analysis using the Head-Complement Schema without linearization constraints

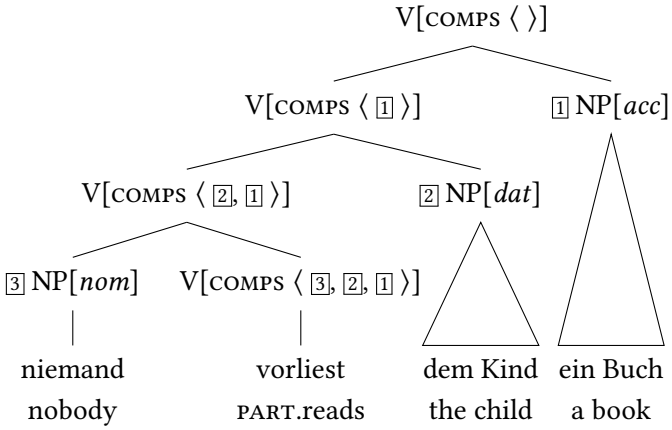

Figure 4.16: Unwanted analysis using the Head-Complement Schema without linearization constraints

ordered after their complements in German (and other SOV languages) and before their complements in English (and other SVO languages). Of course, there are sentences in German in which the verb is in first or second position and there are sentences in the Germanic SVO languages in which the object precedes the verb. These sentences will be covered in Chapter 6.

4.7 Adjuncts

While arguments are selected by their head, adjuncts select the head. The difference between languages like Dutch and German on the one hand and Danish and English on the other hand can be explained by assuming that adjuncts in the former languages are less picky as far as the element is concerned with which they combine. Dutch (28) and German (29) adjuncts can attach to any verbal projection, while Danish (30) and English (31) require a VP (see also Section 2.4):

(28) a. [dat] onmiddellijk iedereen het boek leest (Dutch)
that promptly everybody the book reads
'that everybody reads the book promptly'
b. [dat] iedereen onmiddellijk het boek leest
that everybody promptly the book reads
c. [dat] iedereen het boek onmiddellijk leest
that everybody the book promptly reads

(29) a. [dass] sofort jeder das Buch liest (German)
that promptly everybody the book reads
'that everybody reads the book promptly'
b. [dass] jeder sofort das Buch liest
that everybody promptly the book reads
c. [dass] jeder das Buch sofort liest
that everybody the book promptly reads

(30) a. at hver læst bogen straks (Danish)
that everybody reads book.DEF promptly
'that everybody reads the book promptly'
b. at hver straks læst bogen
that everybody promptly reads book.DEF
'that everybody promptly reads the book'

(31) a. that everybody reads the book promptly
b. that everybody promptly reads the book

For the selection of arguments the features SPR and COMPS are used. In parallel there is a MOD feature that is part of a lexical description of a head of a phrase that can function as an adjunct (MOD is an abbreviation for *modified*). The value of MOD is a description of an appropriate head. Head-adjunct structures are licencsed by the schema in Figure 4.17. For instance, attributive adjectives have

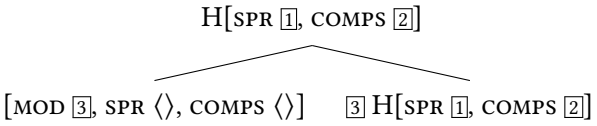

Figure 4.17: Sketch of the Head-Adjunct Schema

$\overline{\text{N}}$ as their MOD value, where $\overline{\text{N}}$ is an abbreviation for a nominal projection that has an empty COMPS list and a SPR list that contains a determiner. (32) shows the lexical item for *brown*:

(32) Lexical item for *brown*:

$$\begin{bmatrix} \text{PHON} & \langle\ \textit{brown}\ \rangle \\ \text{MOD} & \overline{\text{N}} \\ \text{SPR} & \langle\rangle \\ \text{COMPS} & \langle\rangle \end{bmatrix}$$

The analysis of the phrase *brown squirrel* is shown in Figure 4.18. In languages

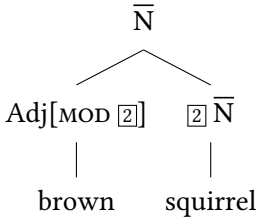

Figure 4.18: Analysis of the head-adjunct structure *brown squirrel*

like German in which the adjective agrees with the noun in gender, number, and inflection class, the properties that the noun must have can be specified inside the MOD value. For instance, *kleiner* selects a male noun and *kleine* selects a female one:

(33) a. ein kleiner Hund
a little dog
b. eine kleine Katze
a little cat

For German adverbials the value restricts the part of speech of the head to be verb (or rather verbal since – as (34b) shows – adjectival participles can be modified as well) and the value of INITIAL to be –.

(34) a. dass es oft lacht (German)
that it often laughs
'that he/she laughs often'
b. des oft lachende Kind
the often laughing child
'the child who laughs often'

The specification of the modified element to be INITIAL – ensures that the adjunct attaches to verbs in final position only (Verb initial sentences are discussed in Chapter 6). A linearization rule has to make sure that adverbials are serialized to the left of the verb, that is, somewhere in the *Mittelfeld*. The MOD value of English adverbials is simply VP. Without any further restrictions, this allows for a pre- and a post-VP attachment of adjuncts.

- SOV (Dutch, German, ...): MOD V[INI–]
- SVO (Danish, English, ...): MOD VP

The analysis of (29a) is shown in Figure 4.19 on the following page, the one of (29b) in Figure 4.20 on the next page, and the one of (29c) in Figure 4.21 on page 85. The only difference between the figures is the respective place of attachment of the adverb. I marked the parts of the tree that are licensed by the Head-Adjunct Schema by including them into a box. All other nodes in the tree are licensed by the Head-Complement Schema in Figure 4.11.

The attentive reader will notice that there is a description following the 3 in the MOD value of the adverbials, while there is no such description in the MOD values of the English examples that follow. Of course this is purely notational since the numbered boxes identify all values with the same numbers, but the convention behind this is to state the description if it differs from what is given at other places where the box occurs. In the case of German, the MOD value of adverbials is just *verb* without any restrictions regarding valence features. The

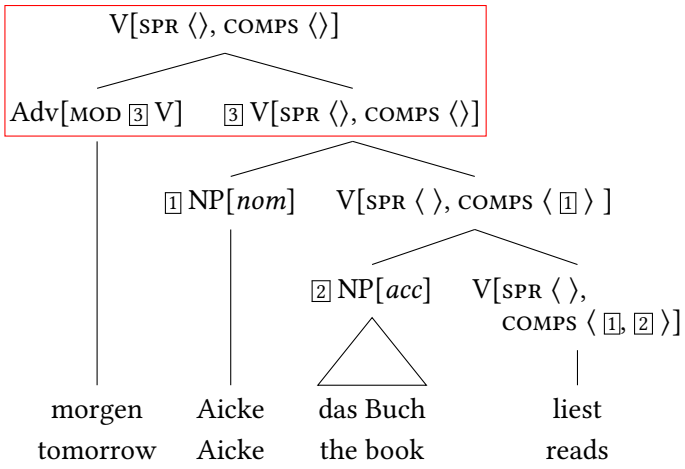

Figure 4.19: Analysis of [*dass*] *morgen jeder das Buch liest* 'that everybody will read the book tomorrow' with the adjunct attaching above subject and object

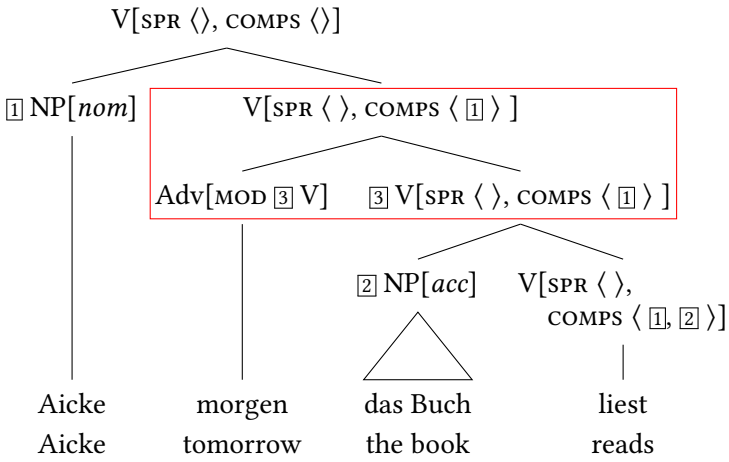

Figure 4.20: Analysis of [*dass*] *jeder morgen das Buch liest* 'that everybody will read the book tomorrow' with the adjunct attaching between subject and object

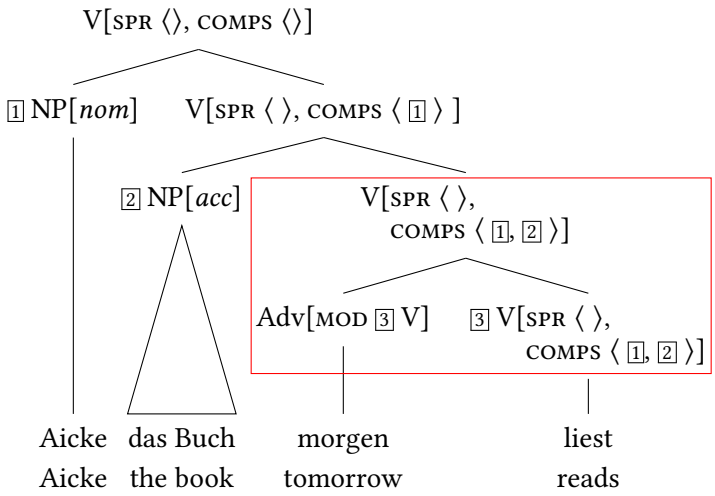
V[SPR ⟨⟩, COMPS ⟨⟩]
1 NP[nom]
V[SPR ⟨ ⟩, COMPS ⟨ 1 ⟩]
2 NP[acc]
V[SPR ⟨ ⟩,
COMPS ⟨ 1, 2 ⟩]
Adv[MOD 3 V]
3 V[SPR ⟨ ⟩,
COMPS ⟨ 1, 2 ⟩]
Aicke das Buch morgen liest
Aicke the book tomorrow reads

Figure 4.21: Analysis of [*dass*] *jeder das Buch morgen liest* 'that everybody will read the book tomorrow' with the adjunct attaching between object and verb

valence features are given at the modified node (e.g., SPR ⟨⟩, COMPS ⟨ 1, 2 ⟩ in Figure 4.21), but not in the MOD value. Since English adverbials modify VPs and since the modified node is a VP, the value of the MOD value is not given in detail in the Figures below, but is just shared with the properties of the modified node.

The Figures 4.22 and 4.23 show the analysis of adjunction with the adverb in pre-VP and post-VP position respectively.

The values of SPR and COMPS in the schema in Figure 4.17 on page 82 have not been explained so far. First there is the sharing of the SPR and COMPS values between mother and head-daughter. Whatever element an adjunct attaches to, the valence requirements of the mother are always identical to the valence requirement of the head-daughter. Nothing is added, nothing is missing. Adjuncts are additional elements that are not selected for via valence features, hence nothing has to be discharged. This can be seen by looking at the German examples in Figures 4.19 to 4.21: *morgen* 'tomorrow' attaches to a node with certain valence requirements and the dominating node has exactly the same valence requirements. In principle the figures should have little numbered boxes in them indicating the identity of the valence requirements of mother and head daughter in head-adjunct combinations. I omitted these so-called structure sharings to keep things simple and readable.

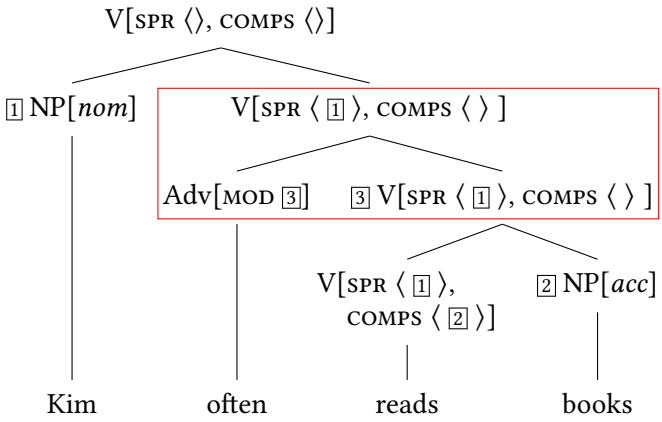

Figure 4.22: Analysis of adjuncts in SVO languages: the adjunct is realized left-adjacent to the VP.

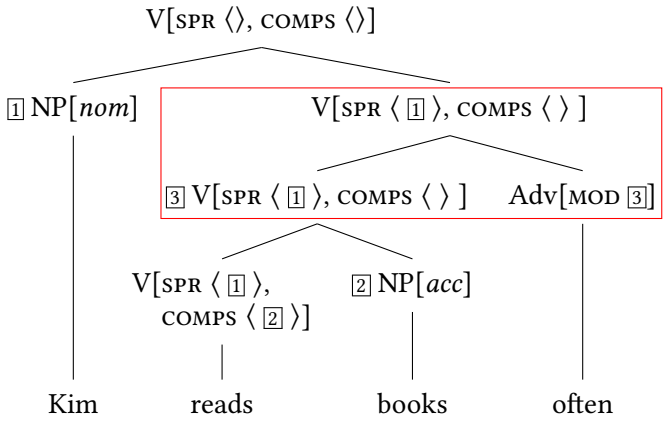

Figure 4.23: Analysis of adjuncts in SVO languages: the adjunct is realized right-adjacent to the VP.

The adjunct itself has to have empty valence lists, that is, it has to be complete. Without this requirement, sentences like the one in (35) would be licensed:

(35) * Sandy read the book in.

in is a preposition that has an NP[*acc*] in its COMPS list. If the Head-Adjunct Schema would not specify the COMPS list of the adjunct daughter to be empty, a preposition could function as the adjunct daughter and a structure for ungrammatical sentence like (35) would be licensed by the grammar.

The specifier specification is as important as the specification of the COMPS list. If non-empty SPR lists were allowed, the contrast in (36) could not be explained:

(36) a. dass Aicke eine Stunde liest (German)
that Aicke an hour reads
'Aicke is reading for an hour.'

b. * dass Aicke Stunde liest
that Aicke hour reads

The analysis of (36a) is shown in Figure 4.24. The adjunct is a full NP. The schema requires the adjunct daughter to be fully complete. If it did not have this requirement, a noun without determiner like *Stunde* 'hour' in (36b) could enter the schema as adjunct daughter and ungrammatical sentences like (36b) would be licensed.

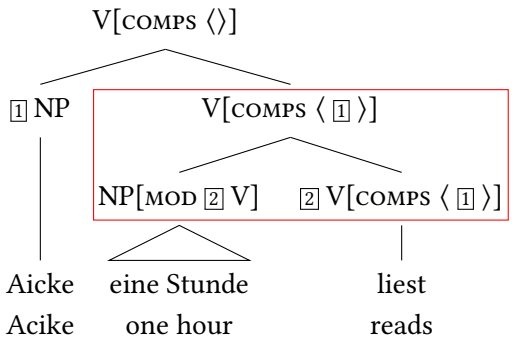

Figure 4.24: Analysis of an adverbial NP in *dass Aicke eine Stunde liest* 'that Aicke is reading for an hour'

4.8 Linking between syntax and semantics

HPSG assumes that all arguments of a head are contained in a list that is called ARGUMENT STRUCTURE (ARG-ST, Davis, Koenig & Wechsler 2021).[7] This list contains descriptions of the syntactic and semantic properties of the selected arguments. For instance the ARG-ST list of English *give* and its German, Danish and Dutch and Icelandic variants is given in (37):

(37) ⟨ NP, NP, NP ⟩

The case systems of the involved languages vary a bit as will be explained in Chapter 7, but nevertheless the orders of the NPs in the ARG-ST list are the same across these languages. They correspond to nom, dat, acc in German (38a) and subject, primary object, secondary object in English (38b):

(38) a. dass das Kind dem Eichhörnchen die Nuss gibt
that the child the squirrel the nut gives
'that the child gives the squirrel the nut'
b. that the child gives the squirrel the nut

In addition to the syntactic features we have seen so far semantic features are used to describe the semantic contribution of linguistic objects. (39) shows some aspects of the description of the English verb *gives*:

(39) lexical item for *gives*:

$$\begin{bmatrix} \textsc{arg-st} & \left\langle \mathrm{NP}_{\boxed{1}}, \mathrm{NP}_{\boxed{2}}, \mathrm{NP}_{\boxed{3}} \right\rangle \\ \textsc{cont} & \begin{bmatrix} \textit{give} & \\ \textsc{agens} & \boxed{1} \\ \textsc{goal} & \boxed{2} \\ \textsc{trans-obj} & \boxed{3} \end{bmatrix} \end{bmatrix}$$

The lowered boxes refer to the referential indices of the NPs. One can imagine these indices as variables that refer to the object in the real world that the NP is referring to. These indices are identified to semantic roles of the verb *give*. Finding reasonable role names is not trivial and some authors just use ARG1, ARG2 and ARG3 to avoid the problems (see Dowty 1991 for discussion).

[7] See Pollard & Sag 1994: 28–29; Wechsler 1995; Davis 2001; Müller 2007a: Section 5.6 for argument linking in HPSG. Davis, Koenig & Wechsler (2021) is a handbook article on linking in HPSG.

The representations for the other languages mentioned above is entirely parallel. Therefore it is possible to capture crosslinguistic generalizations. Nevertheless there are differences between the Germanic OV and VO languages. As was explained above the VO languages map their subject to SPR and all other arguments to COMPS, while the finite verbs of OV languages have all arguments on COMPS.

4.9 Alternatives

4.9.1 CP/TP/VP models

Grewendorf (1988; 1995), Lohnstein (2014) and many others assume that German has a structure that is parallel to the one that is assumed for English. As for English the verb is assumed to form a phrase with its objects and this VP functions as the argument of a Tense head to form a maximal projection together with the subject of the verb, which is realized in the specifier position of the TP. Figure 4.25 shows the analysis of (40) with the respective layers.

(40) dass jeder dieses Buch kennt
that everbody this book knows
'that everybody knows this book'

The problem with such proposals is that the subject does not depend on the verb but on T. Therefore there is no way of serializing the accusative object before the subject unless one assumes that the object is moved to a higher position in the tree, e.g., adjoined to TP as in Figure 4.26.

While researchers like Frey (1993: 185) argued that quantifier scopings are actually evidence for movement-based approaches, the argument backfires. Let us consider Frey's examples. Frey argues that sentences without movement have only one reading and sentences like (41b) in which – according to the movement-based theory – movement is involved have two readings: one corresponding to the visible order and one to the order before movement, the so-called underlying order.

(41) a. Es ist nicht der Fall, daß er mindestens einem Verleger fast
it is not the case that he at.least one publisher almost
jedes Gedicht anbot.
every poem offered
'It is not the case that he offered at least one publisher almost every poem.'

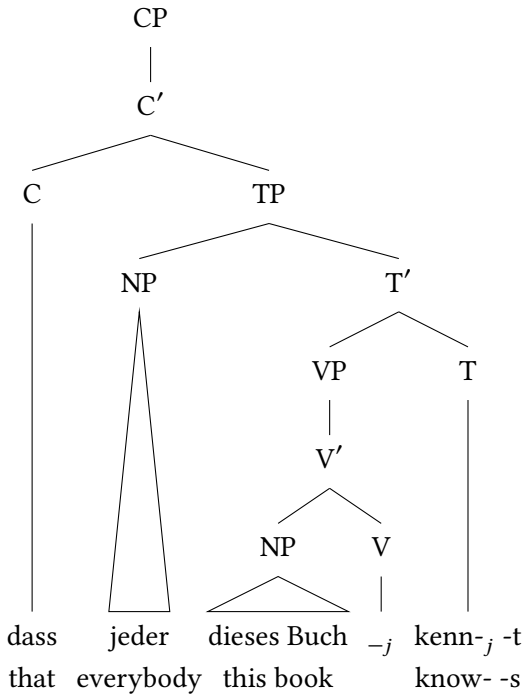

Figure 4.25: Sentence in the CP/TP/VP model

b. Es ist nicht der Fall, daß er fast jedes Gedicht$_i$ mindestens einem
it is not the case that he almost every poem at.least one
Verleger $_i$ anbot.
publisher offered
'It is not the case that he offered almost every poem to at least one publisher.'

However, Kiss (2001: 146) and Fanselow (2001: Section 2.6) pointed out that such approaches have problems with multiple moved constituents. For instance in an example such as (42), it should be possible to interpret *mindestens einem Verleger* 'at least one publisher' at the position of $_i$, which would lead to a reading where *fast jedes Gedicht* 'almost every poem' has scope over *mindestens einem Verleger* 'at least one publisher'. However, this reading does not exist.

(42) Ich glaube, dass mindestens einem Verleger$_i$ fast jedes Gedicht$_j$ nur
I believe that at.least one publisher almost every poem only

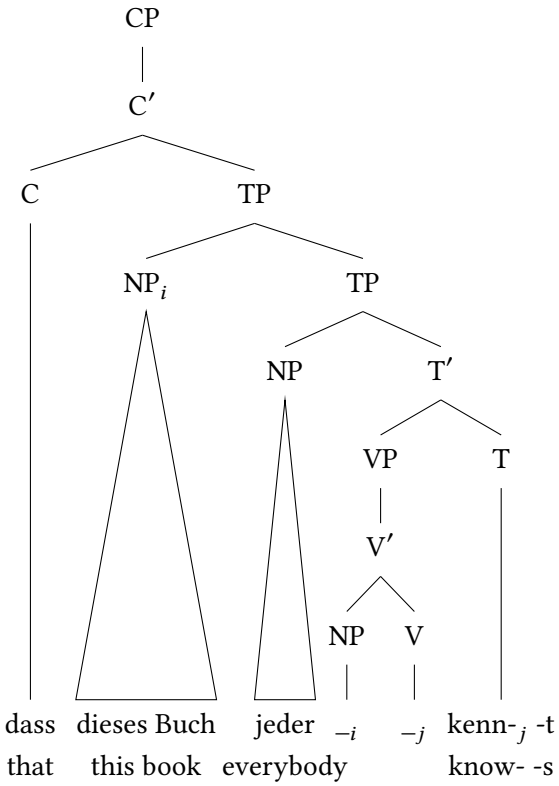

Figure 4.26: Scrambling has to be movement in the CP/TP/VP model

dieser Dichter $_i$ $_j$ angeboten hat.
this poet offered has
'I think that only this poet offered almost every poem to at least one publisher.'

This means that one needs some way to determine the deviation with respect to an unmarked order, but movement is not the solution. See Müller (2020: Section 3.5) for further discussion and Kiss (2001) for an approach to scope within the framework assumed here.

Exercises

1. Provide the valence lists for the following words:

   (43) a. laugh
   b. eat
   c. to douse
   d. bezichtigen (German)
   accuse
   e. he
   f. the
   g. Ankunft (German)
   arrival

   If you are uncertain as far as case assignment is concerned, you may use the Wiktionary[a].

2. Draw trees for the NPs that were also used in exercise 1 on page 60 in Chapter 3.

   (44) a. eine Stunde vor der Ankunft des Zuges
   one hour before the arrival of.the train
   'one hour before the arrival of the train'
   b. kurz nach der Ankunft in Paris
   shortly after the arrival in Paris
   'shortly after the arrival in Paris'
   c. das ein Lied singende Kind aus dem Allgäu
   this a song singing child from the Allgäu
   'the child from the Allgäu singing a song'

3. Draw trees for the following examples. NPs can be abbreviated.

(45) a. weil Aicke dem Kind ein Buch schenkt
because Aicke the.DAT child a.ACC book gives.as.a.present
(German)
'because Aicke gives the child a book as a present'

b. because Kim gave a book to him

c. Sandy saw this yesterday.

d. at Bjarne læste bogen
that Bjarne read book.DEF
'that Bjarne read the book'

[a] https://de.wiktionary.org/, 2018-07-02.

5 The verbal complex

SOV languages like Dutch and German form verbal complexes. There are several indicators for this that were worked out in detail by Gunar Bech (1955). One way to analyze such verbal complexes is to assume that the verbs in a sentence form a unit that basically behaves like a simplex verb. This explains for instance why the arguments of the three verbs in Haider's example (1986b: 110; 1991: 128) in (1) can be scrambled:

(1) weil es ihr jemand zu lesen versprochen hat
because it her somebody to read promised has
'because somebody promised her to read it'

es depends on *zu lesen* 'to read', *ihr* 'her' depends on *versprochen* 'promised' and *jemand* is the subject and agrees with the finite verb *hat* 'has' (usually it is also treated as a dependent of the auxiliary *hat*).

It should be said that there is extreme variation in the German dialects as far as the serialization of elements in the verbal complex is concerned. The governing verb is realized to the right of the embedded verb in Standard German: V_3 V_2 V_1 as in (1), but there are examples like (3) taken from Müller (1999: 376).[1]

(2) a. Ich hätte stapelweise Akten können haben. (German, Berlin dialect)
I had by.the.pile files can have
'I could have had files by the pile.'

b. weil ich mir das nich hab' lassen gefallen
because I me that not have let please
'because I did not put up with it'

c. wenn se mir hier würden rausschmeißen, ...
if they me here would out.throw
'if they would kick me out here'

The orders in (2) correspond to the order that is most natural in Dutch. (3) shows some Dutch examples:

[1] Interview partner in: *Insekten und andere Nachbarn – ein Haus in Berlin*, ARD 15.11.1995.

(3) a. dat Kim het boek wil lezen
that Kim the book wants read
'that Kim wants to read the book'

b. dat Kim Sandy het boek laat lezen
that Kim Sandy the book lets read
'that Kim lets Sandy read the book'

c. dat Kim Sandy het boek wil laten lezen
that Kim Sandy the book wants let read
'that Kim wants to let Sandy read the book'

SVO languages like Danish and English do not allow the arguments of embedded verbs to be scrambled with arguments of higher verbs. All arguments stay in their VP (modulo extraction, of course).

The trick that is used to analyze the verbal complexes is called *argument attraction* or *argument composition* and was developed by Geach (1970) in the framework of Categorial Grammar and adapted for HPSG by Hinrichs & Nakazawa (1994). The analysis of *lesen wird* 'read will' as it occurs in (4) is shown in Figure 5.1.

(4) dass keiner das Buch lesen wird
that nobody the book read will
'that nobody will read the book'

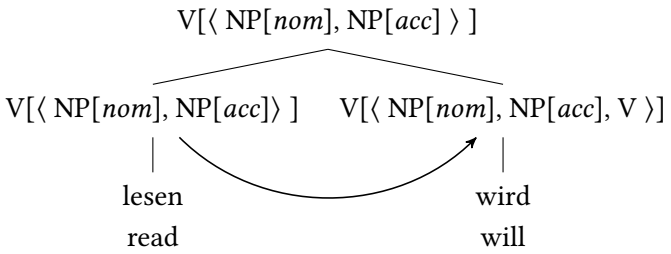

Figure 5.1: Analysis of the verbal complex formation of *lesen wird* 'read will' using argument composition (preliminary version)

wird 'will' selects an infinitive without *zu* and in addition its arguments. This infinitive (*lesen* 'read') is combined with the verb and hence is not contained in the valence list of the mother node.

Returning to our meal-shopping analogy from p. 65, the verbal complex formation can be envisaged by imagining a young and helpful auxiliary verb helping

out a person of the high risk group in the middle of a pandemic. Since high risk persons are not supposed to do shopping, the helpful person takes over their shopping list and does the shopping for them. In the case of auxiliary verbs the auxiliary verb just selects the main verb and apart from this does not require any further arguments apart from the ones taken over from the embedded verb. This means the auxiliary verb just does the shopping for the main verb. A very altruistic verb it is. Later we will have a look at verbs like *try* and *let* that do require their own arguments in addition to the ones of the embedded verb. This will be parallel to a shopping event where the helping person buys its own goods in addition to buying goods for somebody else.

The combination of *lesen* and *wird* behaves like a simplex verb in that it can be combined with its arguments in any order. Figure 5.2 shows the analysis of (5a) and Figure 5.3 on the following page shows the analysis of (5b).

(5) a. [dass] keiner das Buch lesen wird
that nobody the book read will
'that nobody will read the book'

b. [dass] das Buch keiner lesen wird
that the book nobody read will
'that nobody will read the book'

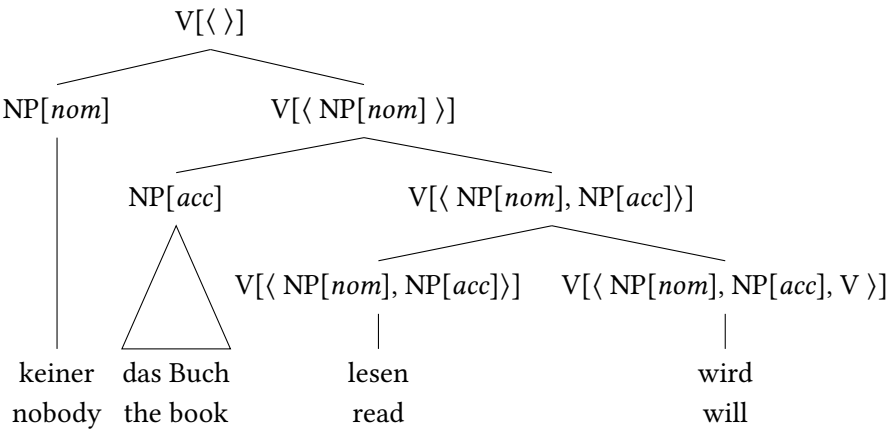

Figure 5.2: Formation of a verbal complex and realization of arguments in normal order (preliminary version)

I follow Kiss (1995: Section 3.1.1) and represent the subject of non-finite verbs as the value of a special feature SUBJ. SUBJ differs from SPR and COMPS in that it

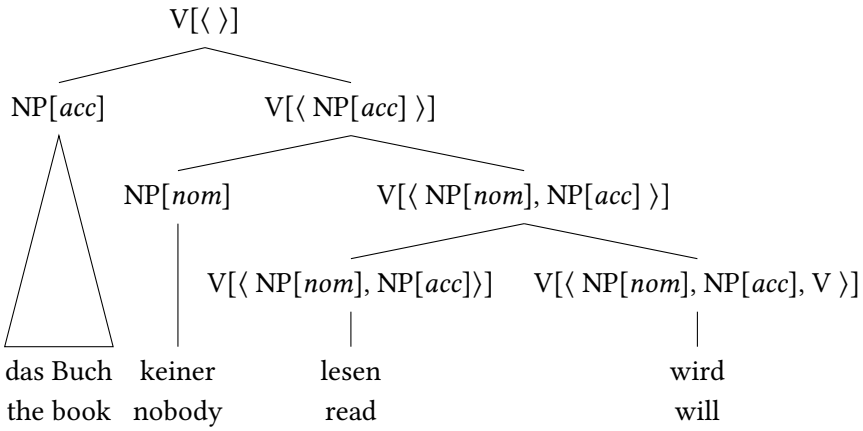

Figure 5.3: Formation of a verbal complex and scrambling of arguments (preliminary version)

is not a valence feature. The reason for this special treatment is that the subject cannot be realized as a part of a non-finite verb phrase:

(6) a. [Das Buch lesen] wird Aicke morgen.
the book read will Aicke tomorrow
'Aicke will read the book tomorrow.'

b. * [Aicke lesen] wird das Buch morgen.
Aicke read will the book tomorrow

c. ?* [Aicke das Buch lesen] wird morgen.
Aicke the book read will tomorrow

The lexical item for the non-finite form of *lesen* 'to read' is given in (7):

(7) *lesen* 'to read' non-finite form:
$$\begin{bmatrix} \textsc{subj} & \langle\ \text{NP}[\textit{nom}]\ \rangle \\ \textsc{comps} & \langle\ \text{NP}[\textit{acc}]\ \rangle \end{bmatrix}$$

The following Attribute Value Matrix (AVM) is a representation of the auxiliary verb *werden* 'will':

(8) *werden* 'will' non-finite form:
$$\begin{bmatrix} \textsc{subj} & \boxed{1} \\ \textsc{comps} & \boxed{2} \oplus \langle\ \text{V}[\textsc{vform}\ \textit{bse}, \textsc{lex+}, \textsc{subj}\ \boxed{1}, \textsc{comps}\ \boxed{2}]\ \rangle \end{bmatrix}$$

werden selects a verb that has the *bse* form, that is an infinitive without *zu* 'to'. The embedded element has to be lexical (LEX+), that is, a single word or a verbal complex. All phrases that are licensed by the Head-Complement Schema and the Specifier-Head Schema are assumed to be LEX−. The boxes with numbers are basically variables. Their values depend on the values of the embedded verbs. Therefore this lexical item can be used with a verb like *lesen* 'to read', which takes a nominative and an accusative case but also with a verb like *helfen* 'to help', which takes a nominative and a dative object.

Before I turn to the details of the analysis, I have to provide the lexical items for the finite form of auxiliaries. Since the subject of finite verbs can of course be realized it has to be represented in one of the valence lists. As was discussed in Section 4.3, German subjects are represented in the COMPS list of finite verbs. Hence the lexical item for *wird* 'will' has the following form:

(9) *wird* 'will' finite form:
$$\begin{bmatrix} \text{SUBJ} & \langle\rangle \\ \text{COMPS} & \boxed{1} \oplus \boxed{2} \oplus \langle\, \text{V}[\text{VFORM } \textit{bse}, \text{ LEX+}, \text{ SUBJ } \boxed{1}, \text{ COMPS } \boxed{2}]\, \rangle \end{bmatrix}$$

This basically says that the valence of *wird* consists of an embedded verb and whatever the SUBJ list of this verb is plus whatever the COMPS list of this verb is. This is exemplified for *lesen wird* in Figure 5.4. The auxiliary selects an infinitive

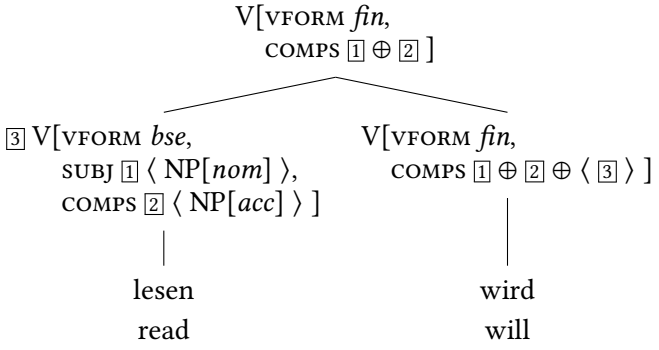

Figure 5.4: Detailed analysis of a verbal complex

without *zu* 'to' (3). This is ensured by the value *bse* for the VFORM feature of the selected verb: *bse* stands for infinitive without *to*/*zu*/..., *inf* stands for an infinitive form with marker, *ppp* stands for participle and *fin* for a finite verb. The subject of the selected infinitive (1) and the complements (2) are taken over. The result is that *lesen wird* has the same arguments as *liest* 'reads'.

To make all of this even more fun, we can make it more complex and look at verbal complexes with three verbs. Figure 5.5 shows the analysis of the verbal complex *lesen können wird* 'read can will' in sentences like (10):

(10) [dass] sie das Buch lesen können wird
that she the book read can will

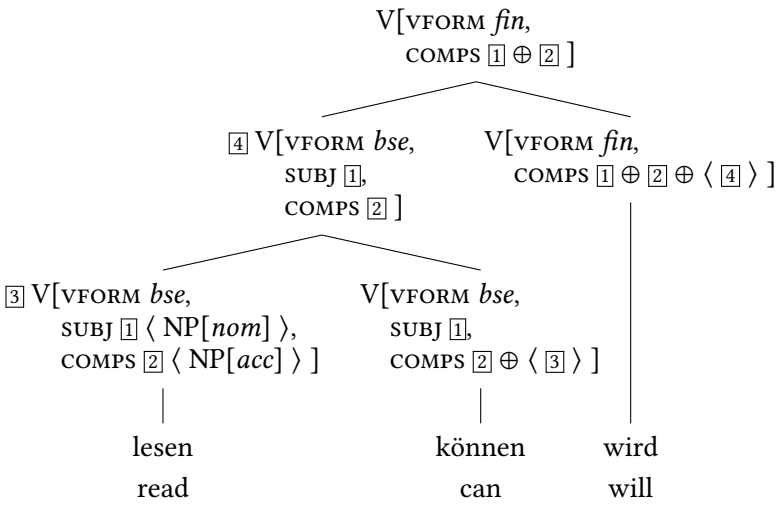

Figure 5.5: Analysis of a German verbal complex with three verbs in cannonical order

One interesting aspect of the analysis is that it can explain a phenomenon that is called Auxiliary Flip or *Oberfeldumstellung*. German optionally allows verbs that govern a modal to be placed to the left of the verbal complex rather than to the right of the modal. So instead of (10) one can also use the order in (11):

(11) [dass] sie das Buch wird lesen können
that she the book will read can

After having discussed the analysis of verbal complexes as they are known from the OV languages like German, Dutch, and Afrikaans, I want to briefly comment on the SVO languages like Danish and English and so on. Usually a head requires its argument to be saturated, that is, the COMPS value has to be the empty list for NP, PPs, APs, CPs and sentential and VP arguments. Verbal complexes are different: words are combined directly. The VO languages differ from the OV languages in not allowing this. In VO languages the verb forms

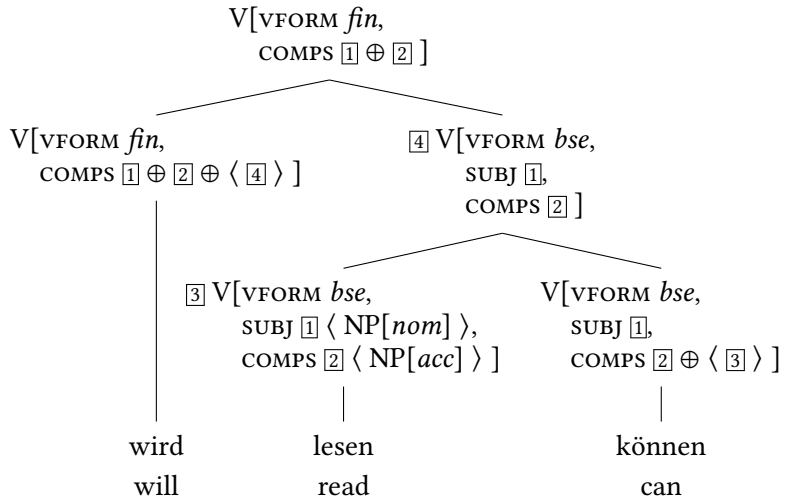

Figure 5.6: Analysis of a German verbal complex with three verbs with Auxiliary Flip

a phrase with its complements and this verb phrase may be embedded under another verb. (12a) shows an example with auxiliary verbs, (12b) is an example with a full verb that takes an infinitive verb phrase with *to* and an object in addition.

(12) a. Kim [will [have [read the book]]].
b. Somebody [promised her [to read it]].

Languages like Danish and English only have the Head-Complement Schema and the Specifier-Head Schema, while languages like Dutch and German have an additional schema that can combine unsaturated words. The schema for predicate complex formation is sketched in Figure 5.7. This schema is very similar

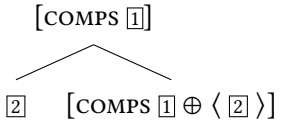

Figure 5.7: Sketch of the Predicate Complex Schema

to the Head-Complement Schema that was given on page 76. The difference is that this schema does not license LEX – elements as the Specifier-Head and Head-

Compelement Schema do. Therefore, the combination of two verbs is compatible with LEX + requirements by governing verbs and an embedding in even more complex verbal complexes is possible. Figure 5.5 is an example: the combination of *lesen* 'read' and *können* 'can' is compatible with the LEX + requirement of *wird* 'will'. The Predicate Complex Schema also differs from the Head-Complement Schema in German in that it combines the head with the last element of the valence list. This is the embedded verb and it ha to be combined with the head before any other argument since one would not know what the other arguments are because they are taken over from the embedded verb.

Before turning to the next phenomenon, I want to briefly discuss the alternative to the verb complex analysis presented here. One alternative suggestion was to analyze auxiliaries in German as VP embedding verbs (Wurmbrand 2003a). Our standard example would then have the analysis in (13):

(13) dass keiner [[das Buch lesen] wird]
that nobody the book read will

The question that such analyses have to answer is how scrambling of arguments of the involved verbs can be accounted for. The answer is often that it is assumed that the object of the embedded verb is extracted from the VP and moved to the left periphery of the clause. This is shown in (14):

(14) dass [das Buch]$_i$ keiner [[$\__i$ lesen] wird]
that the book nobody read will
'that nobody will read the book'

However, analyses that treat scrambling as movement are problematic since they predict additional readings of sentences that have quantifiers in their NPs (Kiss 2001: 146; Fanselow 2001: Section 2.6).

Before I turn to the analysis of the verb position, I want to show how sentences with several verbs in SVO languages can be analyzed. Figure 5.8 on the facing page shows the analysis of the English version of sentence (5a). The verb *reads* selects a subject and an object. The verb forms a VP with the NP *the book*. This VP is still lacking a subject. The auxiliary *will* selects a VP and a subject that is identical with the subject of *read*. The combination of *will* and the VP is licensed by the Head-Complement Schema that was sketched in Figure 4.11 on page 76.

The equivalent of *lesen können wird* 'read can will' cannot be given here, since English modal verbs do not have non-finite forms, but one can construct examples with modals as the highest verb:

(15) She [must [have [seen it]]].

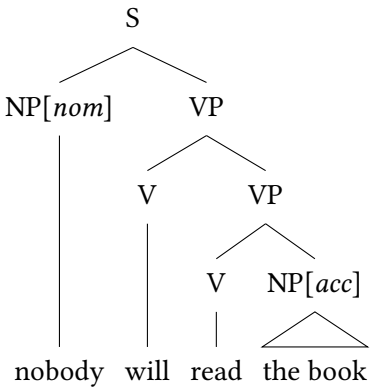

Figure 5.8: Embedding of a VP in SVO languages

This sentence has a structure that is similar to the one in Figure 5.8: *must* and *have* both embedd VPs.

Finally, Figure 5.9 on the following page shows the translation of (1):

(16) Somebody has promised her to read it.

promise is a verb that takes a subject, an object, and a VP complement. Like in the analysis of (20) on page 76 – which is repeated here as (17) for convenience – the verb *promised* is combined with its NP complement first and then with its VP argument.

(17) Nobody gave the child a book.

The VP argument of *promised* in Figure 5.9 consists of *to* and another VP with an infinitive in base form. *to* is analyzed as an auxiliary verb (Gazdar et al. 1982: 600; Sag et al. 2020: 147). It is important to note that the object *him* cannot appear in any other position (appart from extraction to the left periphery). For instance, it cannot appear in the position of *the book* and the same holds for *the book*: This phrase cannot appear in any other place than in the object position.

Exercises

1. Sketch the analysis of the verbal complexes in the following examples:

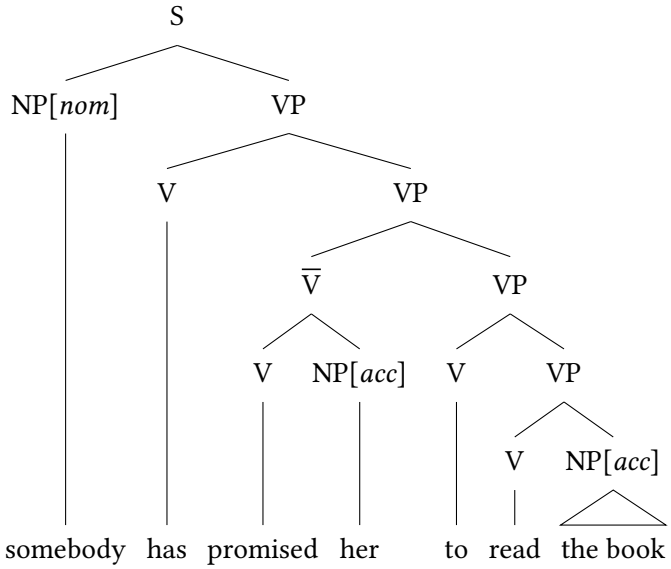

Figure 5.9: Embedding of a VP with verbs that take an additional object

(18) a. dass sie darüber lachen muss (German)
that she there.about laugh must
'that she has to laugh about it'

b. dass sie darüber hat lachen müssen
that she there.about has laugh must
'that she had to laugh about it'

c. dass sie darüber wird haben lachen müssen
that she there.about will have laugh must

You may omit the SPR values, since they are the empty list for all German verbs anyway.

2. Search for two sentences with a verbal complex in a newspaper or in corpora (for example the COSMAS corpus[a]) and analyze the verbal complexes.

3. Search for verbal complexes with more than four verbs in a corpus and

document your search.

[a] https://cosmas2.ids-mannheim.de, 2020-05-11.

Further reading

The analysis of verbal complexes in HPSG was first developed by Hinrichs & Nakazawa (1989a,b). Hinrichs & Nakazawa (1994) is the first peer reviewed publication on this topic by Hinrichs & Nakazawa. Kiss (1995) is a monograph dealing with verbal complexes. Meurers (2000) also deals with verbal complexes including difficult cases like the so-called *Zwischenstellung*, which is no treated here. Müller (2002) treats not just verbal complex but also other types of complex predicates like adjective verb complexes, resultative constructions and particle verbs.

Godard & Samvelian (2021) provide an overview about analyses of complex predicates in HPSG.

6 Verb position: Verb first and verb second

This chapter deals with the analysis of the verb position in V2 langauges. I will concentrate on Danish and German, which may serve as prototypical examples: Danish is an SVO language, while German is SOV. I will first discuss arguments for the classification of German as an SOV language and provide the necessary data on Danish and then explain the respective analyses.

6.1 The phenomenon

Section 2.1 contains a discussion of the basic order of subject, object and verb in the languages of the world and in the Germanic languages in particular. I discussed the classification provided by the World Atlas of Language Structures, which suggested that German is a language with two dominant constituent orders: SOV and SVO. Claiming that SVO is a basic order on the basis of pure counting is somehow strange given the fact that most German sentences do not have the subject in first position anyway. The following text may serve as an example:

(1) Für selbstfahrende Autos soll es in Deutschland nach Angaben von Bundesverkehrsminister Alexander Dobrindt (CSU) bald eine Teststrecke geben. Auf der Autobahn A9 in Bayern sei ein Pilotprojekt „Digitales TestfeldAutobahn“ geplant, wie aus einem Papier des Bundesverkehrsministeriums hervorgeht. Mit den ersten Maßnahmen für diese Teststrecke solle schon in diesem Jahr begonnen werden. Mit dem Projekt soll die Effizienz von Autobahnen generell gesteigert werden. „Die Teststrecke soll so digitalisiert und technisch ausgerüstet werden, dass es dort zusätzliche Angebote der Kommunikation zwischen Straße und Fahrzeug wie auch von Fahrzeug zu Fahrzeug geben wird“, sagte Dobrindt zur Frankfurter Allgemeinen Zeitung. Auf der A9 sollten sowohl Autos mit Assistenzsystemen als auch später vollautomatisierte Fahrzeuge fahren können. Dort soll die Kommunikation nicht nur zwischen Testfahrzeugen, sondern auch zwischen

> Sensoren an der Straße und den Autos möglich sein, etwa zur Übermittlung von Daten zur Verkehrslage oder zum Wetter. Das Vorhaben solle im Verkehrsministerium von einem runden Tisch mit Forschern und Industrievertretern begleitet werden, sagte Dobrindt. Dieser solle sich unter anderem auch mit den komplizierten Haftungsfragen beschäftigen. Also: Wer zahlt eigentlich, wenn ein automatisiertes Auto einen Unfall baut? [Mithilfe der Teststrecke] solle die deutsche Automobilindustrie auch beim digitalen Auto „Weltspitze sein können", sagte der CSU-Minister. Die deutschen Hersteller sollten die Entwicklung nicht Konzernen wie etwa Google überlassen. Derzeit ist Deutschland noch an das „Wiener Übereinkommen für den Straßenverkehr" gebunden, das Autofahren ohne Fahrer nicht zu lässt. Nur unter besonderen Auflagen sind Tests möglich. Die Grünen halten die Pläne für unnütz. Grünen-Verkehrsexpertin Valerie Wilms sagte der Saarbrücker Zeitung: „Der Minister hat wichtigere Dinge zu erledigen, als sich mit selbstfahrenden Autos zu beschäftigen." Die Technologie sei im Verkehrsbereich nicht vordringlich, auch stehe sie noch ganz am Anfang. Aus dem grün-rot regierten Baden-Württemberg – mit dem Konzernsitz von Daimler – kamen hingegen andere Töne. Was in Bayern funktioniere, müsse auch in Baden-Württemberg möglich sein, sagte Wirtschaftsminister Nils Schmid (SPD). Von den topografischen Gegebenheiten biete sich die Autobahn A81 an. (taz: 27.01.2015)

The subjects are marked in red and the non-subjects in green. I also counted subjects/non-subjects within embedded clauses. The ratio is 10 subjects compared to 15 non-subjects. So, the question is: What does this number tell us? Of course we could now further differentiate the grammatical functions of the fronted material. We would find that we have 3 object clauses fronted, the rest of the fronted constituents is adverbials. We could conclude that SVO is more common than OVS, but saying that SVO is basic would not be appropriate. Rather Adv V S O should be regarded as a basic pattern if we assume this little text as our empirical basis. Of course, assuming the two texts as the basis of scientific claims is not sufficient. Hinrichs & Kübler (2005: Section 4) examined the *Vorfeld* constituents in the TüBa-D/S and Z corpora. The S corpus contains spoken German from the machine translation project Verb*mobil* and the Z corpus sentences from the German newspaper taz. Both corpora are annotated for grammatical function. The TüBa-D/S consisted of a total of 38,342 trees and the TüBa-D/Z treebank had 22,087 trees when the paper was written in 2005. The two corpora had subjects in the *Vorfeld* in 50.3 % and 52.1 % of the cases, respectively. So, assuming SVO as the basic order would not be helpful, since in about 50 % of the

clauses and may be even more, one would have to deal with an order in which the subject is not in initial position. On top of this, there would be the problem of subordinated sentences, which clearly do have a SOV order. Therefore syntacticians of various different frameworks (see Müller 2020 for approaches in GB, Minimalism, LFG, Categorial Grammar, and HPSG) assume that SOV is the base order of German. The finite verb is fronted to mark the sentence type and one constituent is put in front of this verb. This fronted constituent can be the subject, an object or any other constituent of the sentence. It may be even a dependent of a deeply embedded element in the clause. So, the position infront of V in the V2 languages has nothing to do with the SVO/SOV dichotomy and basically disturbs the picture and makes the counting-approach pursued in the WALS (see Section 2.1) non-applicable.

In the following I will provide facts that are seen as evidence for SOV as the basic order of German (and Dutch). Before I provide an analysis in Section 6.2, I discuss the verb position in the germanic SVO languages with Danish as an example in Section 6.1.2.

6.1.1 German as an SOV language

6.1.1.1 The order of particle and verb and idioms

Verb particles form a close unit with the verb. The unit is observable in verb final sentences only, which supports an SOV analysis (Bierwisch 1963: 35).

(2) a. weil er morgen anfängt
because he tomorrow at.catches
'because he starts tomorrow'

b. Er fängt morgen an.
he catches tomorrow at
'He starts tomorrow.'

The particle verb in (2) is non-transparent: its meaning is not related to the verb *fangen* 'to catch'. Such particle verbs are sometimes called mini idioms. In fact the argument above can also be made with real idioms: Many idioms do not allow rearrangement of the idiom parts:

(3) a. dass niemand dem Mann den Garaus macht
that nobody the man the GARAUS makes
'that nobody kills the man'

b. ?* dass dem Mann den Garaus niemand macht
that the man the GARAUS nobody makes

c. Niemand macht ihm den Garaus.
nobody makes him the GARAUS
'Nobody kills him.'

This is an instance of Behaghel's law (1932) that things that belong together semantically tend to be realized together. The exception is the finite verb. The finite verb can be realized in initial or final position despite the fact that this interrupts the continuity of the idiomatic material. Since the continuity can be observed in SOV order only, this order is considered basic.

6.1.1.2 Verbs formed by back-formation

Verbs that are derived from nouns by backformation often cannot be separated and verb second sentences therefore are excluded (see Haider 1993: 62, who refers to unpublished work by Höhle 1991):

(4) a. weil sie das Stück heute uraufführen
because they the play today play.for.the.first.time
'because they premiered the play today'

b. * Sie uraufführen heute das Stück.
they play.for.the.first.time today the play

c. * Sie führen heute das Stück urauf.
they guide today the play PREFIX.PART

Hence these verbs can only be used in the order that is assumed to be the base order.

6.1.1.3 Constructions that only allow SOV order

Similarly, it is sometimes impossible to realize the verb in initial position when elements like *mehr als* 'more than' are present in the clause (Haider 1997b; Meinunger 2001):

(5) a. dass Hans seinen Profit letztes Jahr mehr als verdreifachte
that Hans his profit last year more than tripled
'that Hans increased his profit last year by a factor greater than three'

b. Hans hat seinen Profit letztes Jahr mehr als verdreifacht.
Hans has his profit last year more than tripled
'Hans increased his profit last year by a factor greater than three.'

c. * Hans verdreifachte seinen Profit letztes Jahr mehr als.
Hans tripled his profit last year more than

So, it is possible to realize the adjunct together with the verb in final position, but there are constraints regarding the placement of the finite verb in initial position.

6.1.1.4 Order in subordinate and non-finite clauses

Verbs in non-finite clauses and in subordinate finite clauses starting with a conjunction always appear finally, that is, in the *rechte Satzklammer*. For example, *zu geben* 'to give' and *gibt* 'gives' appear in the *rechte Satzklammer* in (6a) and (6b):

(6) a. Der Clown versucht, Kurt-Martin die Ware zu geben.
the clown tries Kurt-Martin the goods to give
'The clown tries to give Kurt-Martin the goods.'

b. dass der Clown Kurt-Martin die Ware gibt
that the clown Kurt-Martin the goods gives
'that the clown gives Kurt-Martin the goods'

6.1.1.5 Scope of adverbials

The scope of adverbials in sentences like (7) depends on their order (Netter 1992: Section 2.3): The left-most adverb scopes over the following adverb and over the verb in final position. This was explained by assuming the following structure:

(7) a. weil er [absichtlich [nicht lacht]]
because he deliberately not laughs
'because he deliberately does not laugh'

b. weil er [nicht [absichtlich lacht]]
because he not deliberately laughs
'because he does not laugh deliberately'

An interesting fact is that the scope relations do not change when the verb position is changed. If one assumes that the sentences have an underlying structure like in (7), this fact is explained automatically:

(8) a. Lacht$_i$ er [absichtlich [nicht _$_i$]]?
laughs he deliberately not
'Does he deliberately not laugh?'
b. Lacht$_i$ er [nicht [absichtlich _$_i$]]?
laughs he not deliberately
'Doesn't he laugh deliberately?'

It has to be mentioned here, that there seem to be exceptions to the claim that modifiers scope from left to right. Kasper (1994: 47) discusses the examples in (9), which go back to Bartsch & Vennemann (1972: 137).

(9) a. Peter liest wegen der Nachhilfestunden gut.
Peter reads because.of the tutoring well
'Peter reads well because of the tutoring.'
b. Peter liest gut wegen der Nachhilfestunden.
Peter reads well because.of the tutoring

(9a) corresponds to the expected order in which the adverbial PP *wegen der Nachhilfestunden* outscopes the adverb *gut*, but the alternative order in (9b) is possible as well and the sentence has the same reading as the one in (9a).

However, Koster (1975: Section 6) and Reis (1980: 67) showed that these examples are not convincing evidence since the *rechte Satzklammer* is not filled and therefore the orders in (9) are not necessarily variants of *Mittelfeld* orders but may be due to extraposition of one constituent. As Koster and Reis showed, the examples become ungrammatical when the right sentence bracket is filled:

(10) a. * Hans hat gut wegen der Nachhilfestunden gelesen.
Hans has well because.of the tutoring read
b. Hans hat gut gelesen wegen der Nachhilfestunden.
Hans has well read because.of the tutoring
'Peter read well because of the tutoring.'

The conclusion is that (9b) is best treated as a variant of (9a) in which the PP is extraposed.

While examples like (9) show that the matter is not trivial, the following example from Crysmann (2004: 383) shows that there are examples with a filled *rechte Satzklammer* that allow for scopings in which an adjunct scopes over another adjunct that precedes it. For instance, in (11) *niemals* 'never' scopes over *wegen schlechten Wetters* 'because of the bad weather':

(11) Da muß es schon erhebliche Probleme mit der Ausrüstung gegeben
there must it PART severe problems with the equipment given
haben, da [wegen schlechten Wetters] ein Reinhold Messner
have since because.of bad weather a Reinhold Messner
[niemals] aufgäbe.
never give.up.would
'There must have been severe problems with the equipment, since someone like Reinhold Messner would never give up just because of the bad weather.'

However, this does not change the fact that the sentences in (7) and (8) have the same meaning independent of the position of the verb. The general meaning composition may be done in the way that Crysmann suggested.

Another word of caution is in order here: there are SVO languages like French that also have a left to right scoping of adjuncts (Bonami et al. 2004: 156–161). So, the argumentation above should not be seen as the only fact supporting the SOV status of German. In any case the analyses of German that were worked out in various frameworks can explain the facts nicely.

6.1.1.6 Position of non-finite verbs in VO and OV languages

Before I turn to the verb position in Danish in the next subsection, I want to repeat Ørsnes' examples containing several non-finite verbs: the example in (12a) shows a German subordinate clause with a verbal complex consisting of three verbs. The level of embedding is indicated by subscript numbers. As can be seen, the verbs are added at the end of the clause. In the corresponding Danish example from Ørsnes (2009: 146), it is exactly the other way around: the embedding verb preceeds the embedded verb.

(12) a. dass er ihn gesehen$_3$ haben$_2$ muss$_1$ (German)
that he him seen have must
'that he must have seen him'

b. at han må$_1$ have$_2$ set$_3$ ham (Danish)
that he must have seen him

The examples in (13) shows variants with different complexity. If we exchange the simplex verb *sah* 'saw' in (13a) by the perfect form, the auxiliary is placed after the participle as in (13b).

(13) a. dass er ihn sah (German)
that he him saw
'that he saw him'
b. dass er ihn gesehen hat
that he him seen has
'that he has seen him'

If a modal is added to (13b), the modal goes to the right of the embedded verbs. This order is distorted by the placement of the finite verb in initial position, but this placement is independent of the order of the non-finite verbs. As the examples in (14) show, the finite verb is realized to the left of the subject both in German (SOV) and in Danish (SVO).

(14) a. Muss er ihn gesehen haben? (German)
must he him seen have
'Must he have seen him?'
b. Må han have set ham? (Danish)
must he have seen him
'Must he have seen him?'

6.1.2 Verb position in the Germanic SVO languages

During the discussion of scope facts I already hinted at an analysis in which a trace marks the position of the verb in final position and the verb in initial position is coindexed with this trace. Although the SVO languages are different a similar analysis has been suggested for languages like Danish. The evidence for this is that adverbials in SVO languages usually attach to the VP, that is they combine with a phrase consisting of the verb and its object or objects. (15) gives an example:

(15) at Conny ikke [$_{VP}$ læser bogen] (Danish)
that Conny not reads book.DEF
'that Conny does not read the book'

The interesting thing now is that the finite verb is placed to the left of the negation in V2 sentences:

(16) Conny læser ikke bogen. (Danish)
Conny reads not book.DEF
'Conny is not reading the book.'

This is seen as evidence for verb fronting by many:

(17) Conny læser$_i$ ikke [$_{\text{VP}}$ $\_i$ bogen].
Conny reads not book.DEF
'Conny does not read the book.'

With this as a background it should be clear what the analysis of yes/no questions as the one in (18b) is:

(18) a. at Conny læser bogen
that Conny reads book.DEF
'that Conny reads the book'
b. Læser Conny bogen?
reads Conny book.DEF
'Does Conny read the book?'

The analysis of the first sentence involves a VP as in (19a) and the second sentence involves a VP with a verbal trace that corresponds to the verb in initial position:

(19) a. at Conny [$_{\text{VP}}$ læser bogen]
that Conny reads book.DEF
'that Conny reads the book'
b. Læser$_i$ Conny [$_{\text{VP}}$ $\_i$ bogen]?
reads Conny book.DEF
'Does Conny read the book?'

It is interesting to note that the German and the Danish question with simplex verbs have exactly the same constituent order. Compare (18b) with (20):

(20) Liest Conny das Buch? (German)
reads Conny the book
'Does Conny read the book?'

The internal structure of these sentences is quite different though. The different nature of the two langauges is of course more obvious when non-finite verbs are involved:

(21) a. Har$_i$ Conny [$\_i$ læst bogen]? (Danish)
has Conny read book.DEF
'Has Conny read the book?'

b. Hat$_i$ Conny das Buch [gelesen _$_i$]? (German)
has Conny the book read
'Has Conny read the book?'

In (21a) the finite verb is connected to a trace in initial position of the VP and in (21b) it is connected to a verb in final position in a verbal complex.

6.1.3 Verb second

Even languages with rather rigid constituent order sometimes allow to front elements or to position elements at the far right, that is, extrapose them. (22) shows English examples of fronting:

(22) a. I read this book yesterday.
b. This book, I read yesterday.
c. Yesterday, I read this book.

The object *this book* and the adjunct *yesterday* are fronted in (22b) and (22c), respectively.

The Germanic languages (with the exception of English) place one constituent in front of the finite verb. As the German examples in (23) show, the fronted constituent can be of any grammatical function:

(23) a. Ich habe das Buch gestern gelesen. (German)
I have the book yesterday read
'I have read the book yesterday.'
b. Das Buch habe ich gestern gelesen.
the book have I yesterday read
c. Gestern habe ich das Buch gelesen.
yesterday have I the book read
d. Gelesen habe ich das Buch gestern, gekauft hatte ich es aber schon
read have I the book yesterday bought had I it but yet
vor einem Monat.
before a month
'I read the book yesterday, but I bought it last month already.'
e. Das Buch gelesen habe ich gestern.
the book read have I yesterday

Such frontings are not clause-bound, that is the fronting may cross one or several clause boundaries and also boundaries of other constituents. (24) shows English examples in which the object of *saw* is extracted across one and two clause boundaries:

(24) a. Chris, Sandy saw.
b. Chris, we think that Sandy saw.
c. Chris, we think Anna claims that Sandy saw.

In German such extractions can be found as well:

(25) a. Wen$_i$ glaubst du, daß ich $\__i$ gesehen habe.[1] (German)
who believes you that I seen have
b. „Wer$_i$, glaubt er, daß er $\__i$ ist?“ erregte sich ein Politiker vom Nil.[2]

It is generally said that they are more common in Southern German variaties, but there are other examples that show that nonlocal dependencies are involved. In (26a) the prepositional object *um zwei Millionen Mark* ‘around two million Deutsche Marks’ depends on *betrügen* ‘to cheat’. It does not depend on any of the verbs in the matrix clause. The phrase *eine Versicherung zu betrügen* ‘an insurance to betray’ is extraposed that is it is positioned to the right of the verbal braket in the so-called *Nachfeld*. The position of *um zwei Millionen Mark* cannot be accounted for by local reordering. Similarly, *gegen ihn* ‘against him’ depends on *Angriffe* ‘attacs’, which is part of the phrase *Angriffe zu lancieren* ‘attacs to launch’. Again an analysis based on local reordering of dependents of a head is impossible.

(26) a. [Um zwei Millionen Mark]$_i$ soll er versucht haben,
around two million Deutsche.Marks should he tried have
[eine Versicherung $\__i$ zu betrügen].[3]
an insurance.company to deceive
‘He apparently tried to cheat an insurance company out of two million Deutsche Marks.’
b. [Gegen ihn]$_i$ falle es den Republikanern hingegen schwerer,
against him fall it the Republicans however more.difficult

[1] Scherpenisse (1986: 84).
[2] Spiegel, 8/1999, S. 18.
[3] taz, 04.05.2001, p. 20.

[[Angriffe $_i$] zu lancieren].[4]
attacks to launch
'It is, however, more difficult for the Republicans to launch attacks against him.'

6.2 The analysis

This section deals with verb first sentences in Subection 6.2.1 and then covers verb second sentences in Subsection 6.2.2.

6.2.1 Verb first

The analysis uses a mechanism that passes up information in a tree. The verbal trace contains the information that a verb is missing locally. This information about the missing verb is passed up to the node that dominates the verbal trace. It is represented using // (read double slash). The respective information is head-information and therefore it is passed up the head-path along with other information as for instance part of speech. Figure 6.1 illustrates. The verbal trace is missing a V, the $\overline{\text{V}}$ is missing a V and the S as well. The initial verb selects for

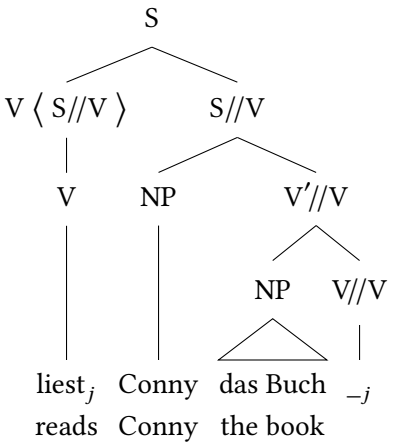

Figure 6.1: Analysis of verb position in German

a sentence that is lacking a V ⟨ S//V ⟩. The lexical item for the verb in initial position is licensed by a lexical rule that relates a verb to a verb that selects for a

[4] taz, 08.02.2008, p. 9.

sentence that is lacking the input verb. Since the selectional requirement of this verb (S//V) is identified with the sentence lacking a V (Conny das Buch $\__j$), the information about the original verb *liest* is identified with the V in S//V. Since the double slash information is head information, it percolates down along the head path to the verbal trace. The information about the initial V is identified with the syntactic and semantic information of the verbal trace in final position and hence this verbal trace behaves exactly like the verb in inital position that was input to the lexical rule.

Various researchers argued that the finite verb in initial position behaves like a complementizer in subordinated clauses (Höhle 1997; Weiß 2005; 2018). This is captured by the analysis. Compare Figure 6.1 with Figure 6.2. The complemen-

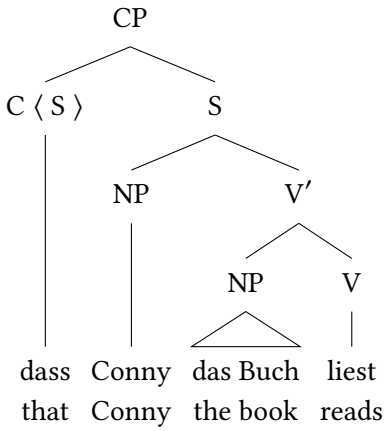

Figure 6.2: Analysis of a verb final clause with complementizer in German

tizer *dass* 'that' selects for a complete sentence, that is, a sentence that does not have a missing verb, and the initial verb *liest* 'reads' in Figure 6.1 selects for a sentence that is missing *liest*. So apart from the overt or covert verb the structures are identical. This fact is important when it comes to the analysis of the scope facts. Since the structure is completely parallel to the one we have in verb final sentences, the scope facts follow immediately: the trace behaves like the verb in initial position, *absichtlich* 'deliberately' modifies the trace and the resulting semantics is passed up in the tree (see Figure 6.3 on the next page). The next step is the modification by *nicht* 'not'. Again the resulting semantics is passed up. *lacht* 'laughs' combines with the clause and takes its semantics over. Since *lacht* is the head the semantics is passed on from there.

The analysis of Danish is completely parallel to the one of German. The only

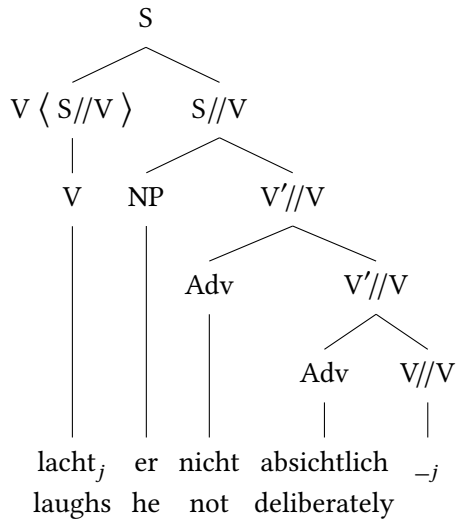

Figure 6.3: Analysis of sentences with adverbials in German

difference between Figure 6.1 and Figure 6.4 is the position of the verbal trace relative to the object: the trace follows the object in German and it preceeds it in Danish.

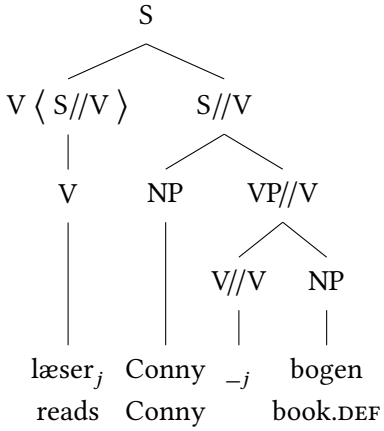

Figure 6.4: Analysis of verb position in Danish

The last thing that is explained in this chapter is the analysis of negation and verb fronting in Danish. Figure 6.5 on the next page shows that the negation at-

taches to the VP as in verb final clauses and the verb is fronted so that it appears to the left of the negation. The next chapter explains the extraction of constituents

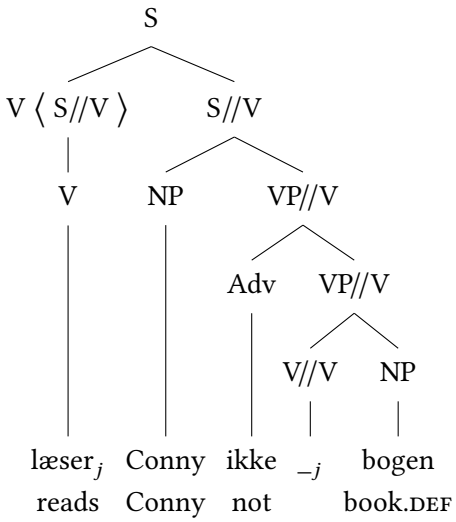

Figure 6.5: The analysis of verb fronting and negation in Danish

and it will then be possible to provide the full structure for sentences like (27a) and it will become clear why the order of negation and verb differs in embedded and main clauses:

(27) a. Conny læser ikke bogen.
Conny reads not book.DEF
'Conny does not read the book.'

b. at Conny ikke læser bogen
that Conny not reads book.DEF
'that Conny does not read the book'

6.2.2 Verb second

The technique that is used for the analysis of nonlocal dependencies is the same that was employed for the analysis of the reorderings of verbs: an empty element takes the position of the fronted constituent and the information about the missing constituent (the so-called gap) is passed up in the tree until it is finally bound off by the fronted element, the so-called filler. Figure 6.6 on the following page illustrates the analysis of (24a).

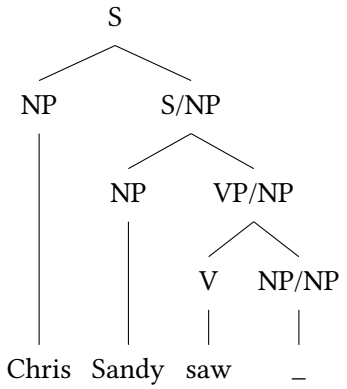

Figure 6.6: The analysis of extraction in English

Figure 6.7 on the next page shows the analysis of example (24b), which really requires a nonlocal dependency. As is shown in the figure, the information about the missing object is passed up to the sentence level (S/NP), to the CP level (CP/NP) and up to the next higher S. There it is bound off by the filler *Chris*. The binding off of the missing element is licensed by a special schema, which is called the Filler-Head Schema. Figure 6.8 on the facing page provides a sketch of this schema.

English is the only non-V2 language among the Germanic languages. In what follows I show how German (V2+SOV) and Danish (V2+SVO) can be analyzed with the techniques that were introduced so far. Figure 6.9 on page 124 shows the analysis of (28):

(28) Das Buch liest Conny.
the book reads Conny
'Conny reads the book.'

The analysis of the German example is more complicated than the English one since verb movement is involved. The verb is fronted as was explained with reference to Figure 6.1. In addition the object is realized by a trace and then filled by the filler *das Buch* 'the book', which is realized preverbally.

I follow Fanselow (2003) and Frey (2004), who assume that the position of the object is initial in the *Mittelfeld*. Since German allows for both nominative, accusative and accusative, nominative order, the position of the trace for the extracted object could be initial or final as in (29a) and (29b), respectively:

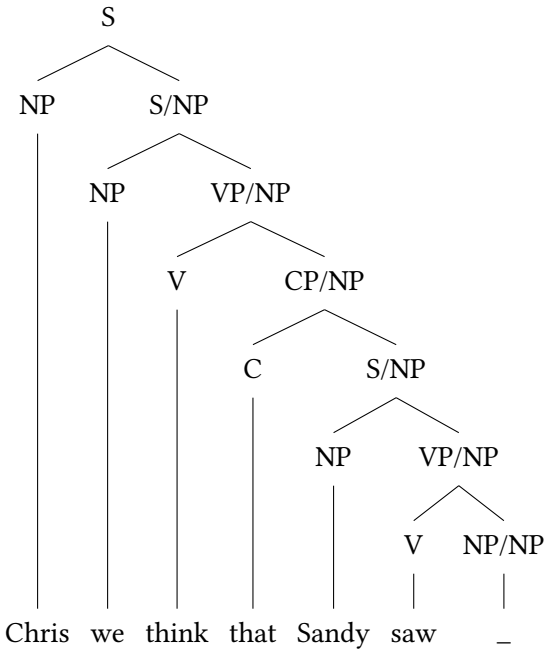

Figure 6.7: Extraction crossing the clause boundary

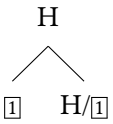

Figure 6.8: Sketch of the Head-Filler Schema

(29) a. [Das Buch]$_i$ liest$_j$ $\__i$ Conny $\__j$.
the book reads Conny

b. [Das Buch]$_i$ liest$_j$ Conny $\__i$ $\__j$.
the book reads Conny

Fanselow and Frey refer to information structural properties that elements in the initial position have and argue that fronted elements like *das Buch* have information structural properties that correspond to the ones that non-fronted elements in the initial *Mittelfeld* position have:

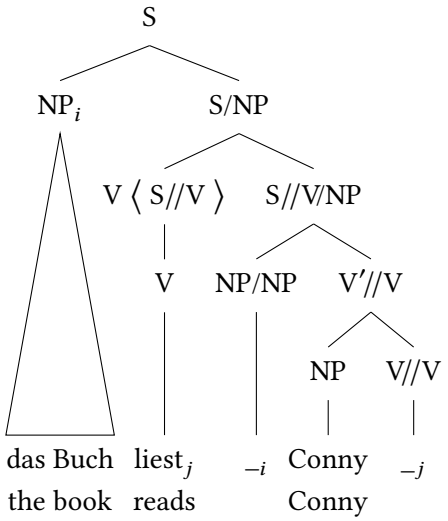

Figure 6.9: Analysis of V2 in German (SOV)

(30) Liest das Buch Conny?
reads the book Conny
'Does Conny read the book.'

They argue that (30) patterns with (29a) rather than with (29b).

The complete discussion will not be repeated here, since this would take us too far away, but the interested reader may consult the discussion section 4.9.1.

The Danish example is similar. We first have the analysis of verb-initial position that involves the double slash mechanism and on top of that we have the fronting of the object using the slash mechanism. Figure 6.10 on the facing page illustrates.

The careful reader will ask why we use two different mechanisms to analyze verb movement and extraction. The answer is that these movement types are different in nature: Verb movement is clause bound while the movement of other constituents may cross clause-boundaries. This is captured by the fact that the double slash information is passed up together with other head features as for instance the part of speech information and the slash information is passed up separately.

Before we deal with passive in the next chapter, we can compare the three sentences in (31):

(31) a. Conny reads a book.

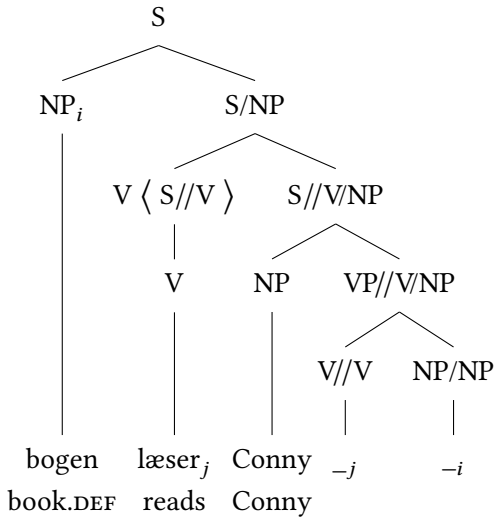

Figure 6.10: Analysis of V2 in Danish (SVO)

b. Conny læser en bog.

c. Conny liest ein Buch.

Again the order of the elements is the same in all three languages. However, English is an SVO non-V2 language, Danish is an SVO+V2 language and German is an SOV+V2 language. The analyses in bracket notation are given in (32), the tree structures are depicted in Figure 6.11 on the next page:

(32) a. [$_{S}$ Conny [$_{VP}$ reads [$_{NP}$ a book]]].

b. [$_{S}$ Conny$_i$ [$_{S/NP}$ læser$_j$ [$_{S/NP}$ $_i$ [$_{VP}$ $_j$ [$_{NP}$ en bog]]]].

c. [$_{S}$ Conny$_i$ [$_{S/NP}$ liest$_j$ [$_{S/NP}$ $_i$ [$_{\overline{V}}$ [$_{NP}$ ein Buch] $_j$]]]].

It may be surprising that these three sentences get such radically different analyses although the order of elements are the same. The difference in structures is the result of the assumption that all declarative main clauses in the Germanic V2 languages follow the same pattern, namely that the finite verb is fronted and then another constituent is fronted. This particular construction is connected to the clause type, that is, to the meaning of the utterance (imperative, question, assertion). The sentences in (25) and (26) show that V2 involves a nonlocal dependency. Therefore the analysis of (32b) is more complex than (33) and involves the fronting of the finite verb to intital position with a successive fronting of the subject:

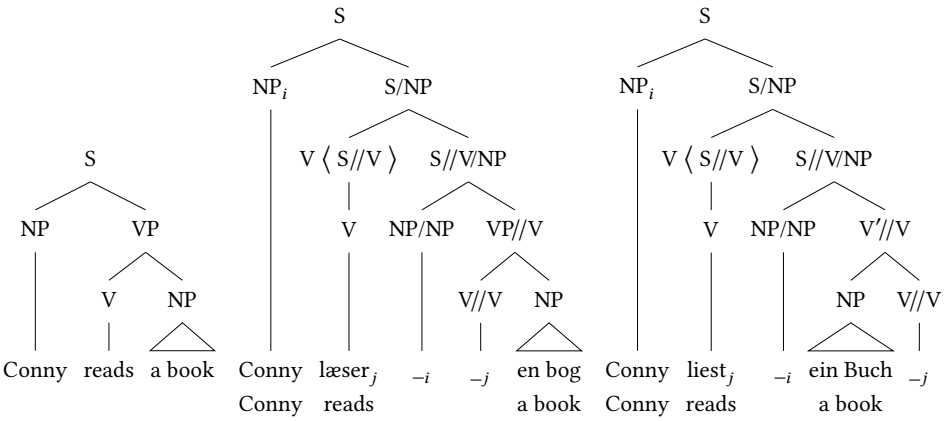

Figure 6.11: Declarative main clauses with subject in initial position in English, Danish and German: despite similar appearance, the syntactic structure is different

(33) [$_S$ Conny [$_{VP}$ læser [$_{NP}$ en bog]]].

The reason is that now all declarative main clauses are subsumed under the same structure, namely (32b). A declarative main clause in all Germanic V2 languages is the combination of an extracted phrase with a verb initial phrase in which the extracted element is missing. Fronting of the finite verb is a way to mark the clause type: if just the finite verb is fronted, a yes/no question (34a) or imperative results (34b).[5]

(34) a. Gibt er ihm das Buch? (German)
gives he him the book
'Does he give him the book?'

b. Gib mir das Buch!
give me the book

If another constituent is fronted, a question with question word (35a), an imper-

[5]Verb initial clauses may also be declarative clauses if so-called *topic drop* (Fries 1988) is involved:

(i) Was macht Peter? Gibt ihm ein Buch. (German)
what does Peter gives him a book
'What does Peter do? He gives him a book.'

The subject of *gibt* 'gives' is dropped. The complete sentence would be a V2 sentence: *Er gibt ihm ein Buch.*.

ative (35b) or a declarative clause (35c) results.

(35) a. Wem gibt er das Buch? (German)
who gives he the book
'Whom does he give the book to?'

b. Jetzt gib ihm das Buch!
now give me the book
'Give me the book now!'

c. Jetzt gibt er ihm das Buch.
now gives he him the book
'He gives him the book now.'

The analysis of the semantics of clause types cannot be given here but the interested reader is referred to Müller (2015b; 2021b).

Comprehension questions

1. How are clause types determined in the Germanic languages?

Exercises

1. Classify the Germanic languages according to their basic constituent order (SVO, SOV, VSO, ...) and V2 assuming that you know that one of the following patterns exist in the language:

   (36) a. NP[acc] V-Aux NP[nom] V NP[dat]
   b. NP[acc] V-Aux NP[nom] NP[dat] V
   c. NP[acc] NP[nom] V NP[acc]
   d. NP[acc] NP[nom] V-Aux V NP[acc]
   e. NP[acc] V-Aux NP[nom] V PP

   Every sentence should be paired with ±V2 and one of the six permuta-

tions of S, O, and V.

If you cannot determine the order unambiguously, please say so. If you think that this pattern does not exist in any of the Germanic languages say so. Please keep in mind that English is a so-called residual V2 language, which means that there are some traces of V2 left in the grammar. Think about question formation in English.

2. Sketch the analysis for the following examples. Use the abbreviations used in this chapter, that is, do not go into the details regarding SPR and COMPS values but use S, VP, and V′. Verb movement should be indicated with the '//' symbol.

   (37) a. Arbejder Bjarne ihærdigt på bogen? (Danish)
   works Bjarne seriously at book.DEF
   'Does Bjarne work seriously on the book?'

   b. Arbeitet Bjarne ernsthaft an dem Buch? (German)
   works Bjarne seriously at the book
   'Does Bjarne work seriously on the book?'

   c. Wird sie darüber nachdenken? (German)
   will she there.upon think
   'Will she think about this?'

3. Sketch the analysis for the following examples. Use the valence features SPR and COMPS rather than the abbreviations S, VP, and V′. Since the value of SPR in German is always the empty list, you may omit it in the German examples. NPs and PPs can be abbreviated as NP and PP, respectively. Verb movement should be indicated with the '//' symbol.

   (38) a. dass sie darüber nachdenkt (German)
   that she there.upon PART.thinks
   'that she laughs about this'

   b. dass sie darüber nachdenken wird
   that she there.upon PART.think will
   'that she will think about this'

c. Wird sie darüber nachdenken?
will she there.upon think
'Will she think about this?'

(39) a. Arbejder Bjarne ihærdigt på bogen? (Danish)
works Bjarne seriously at book.DEF
'Does Bjarne work seriously on the book?'

b. Arbeitet Bjarne ernsthaft an dem Buch? (German)
works Bjarne seriously at the book
'Does Bjarne work seriously on the book?'

4. Sketch the analysis of the following examples. NPs may be abbreviated. Valence features should not be given, but node labels like V, V′, VP and S should be used instead. If non-local dependencies are involved indicate them using the '/' symbol.

(40) a. Such books, I like.

b. Solche Bücher mag ich. (German)
such books like I
'I like such books.'

c. Boger som det elsker jeg. (Danish)
books like this like I
'I like such books.'

7 Passive

This chapter deals with the passive.[1] Passive is usually analyzed as the suppression of the subject. However, before we can develop an analysis we have to ask what it is that constitutes a subject. This is a question that is the topic of edited volumes and dissertations and modest as I am, I will try and provide an answer at least for the Germanic languages. As we will see, the situation is rather clear in languages like Danish, English, and German, but there are exciting facts to be discovered about Icelandic.

7.1 The phenomenon

7.1.1 Subjects and other subjects

The situation in languages like English, Danish, and German is rather clear. For instance, many authors assume that non-predicative NPs in the nominative are subjects in German. So, *der Delphin* 'the dolphin' is the subject of the sentences in (1):

(1) a. Der Delphin lacht. (German)
the dolphin laughs

b. Der Delphin hilft dem Kind.
the dolphin helps the child

c. Der Delphin gibt ihr einen Ball.
the doplhin gives her a ball

The restriction to non-predicative NPs is needed since otherwise, we would have to assume that both NPs in (2) are subjects, but *ein Lügner* 'a lier' is a predicative phrase and only *der Mann* 'the man' is the subject.

(2) Der Mann ist ein Lügner. (German)
the.NOM man is a.NOM liar
'The man is a liar.'

[1] This chapter is a rough draft. Most of the references to other literature are still missing ...

In addition certain clausal arguments are treated as subjects.

Genetives and datives as in (3) are not counted among the subjects in German.

(3) a. Ihrer wurde gedacht. (German)
they.GEN was remembered
'They were remembered.'

b. Ihm wurde geholfen.
he.DAT was helped
'He/she was helped.'

Interestingly the question whether genitives and datives like those in (3) are subjects was answered quite differently for the SVO language Icelandic by researchers following the work of Zaenen, Maling & Thráinsson (1985). Although the sentences in (4) look like those in (2), the genetive and the dative element are assumed to be subjects.

(4) a. Hennar var saknað. (Icelandic)
she.SG.GEN was missed

b. Þeim var hjalpað.
they.PL.DAT was helped

Since Icelandic is a V2 language the constituent order in such simple sentences does not help us to determine whether *hennar* 'her' and *Þeim* 'them' are subjects or not. These elements are fronted and since both subjects and objects can be fronted, the sentences in (4) do not help us in determining the grammatical function of these arguments. However, Zaenen, Maling & Thráinsson (1985) argued that these elements should be analyzed as subjects and provided several tests. Among the tests are more elaborate positional tests and omissability in so-called control constructions. I will turn to these tests now.

7.1.1.1 The position of subjects in V2 and V1 sentences

The first test that was suggested uses the position of constituents in V2 sentences in which a non-subject is fronted (Zaenen, Maling & Thráinsson 1985: Section 2.3). For instance, consider the following examples:

(5) a. Með þessari byssu skaut Ólafur refinn. (Icelandic)
with this shotgun shot Olaf.NOM the.fox.ACC

b. * Með þessari byssu skaut refinn Ólafur.
with this shotgun shot the.fox.ACC Olaf.NOM

The nominative can appear directly after the finite verb *skaut* 'shot' as in (5a) but it cannot appear to the right of the accusative as in (5b).

The same can be observed with *w*-questions:

(6) a. Hvenær hafði Sigga hjálpað Haraldi? (Icelandic)
when has Sigga.NOM helped Harold.DAT

b. * Hvenær hafði Haraldi Sigga hjálpað?
when has Harald.DAT Sigga.NOM helped

The object has to follow the participle *hjálpað* as in (6a) and the subject immediately follows the finite verb. Examples with the object before the subject as in (6b) are ungrammatical. The dative object can be fronted, but then it has to be realized in initial position to the left of the finite verb, not to its right:

(7) Haraldi hafði Sigga aldrei hjálpað. (Icelandic)
Harald.DAT has Sigga.NOM never helped

The same situation can be found in yes/no questions:

(8) a. Hafði Sigga aldrei hjálpað Haraldi? (Icelandic)
has Sigga.NOM never helped Harald.DAT

b. * Hafði Haraldi Sigga aldrei hjálpað?
has Harald.DAT Sigga.NOM never helped

Zaenen, Maling & Thráinsson (1985: Section 2.3) observed that certain datives can appear in this postverbal position as well:

(9) a. Hefur henni alltaf þótt Ólafur leiðinlegur? (Icelandic)
has she.DAT always thought Olaf.NOM boring.NOM
'Has she always considered Olaf boring?'

b. Ólafur hefur henni alltaf þótt leiðinlegur.
Olaf.NOM has she.DAT always thought boring.NOM
'She alway considered Olaf boring.'

c. * Hefur Ólafur henni alltaf þótt leiðinlegur?
has Olaf.NOM her.DAT always thought boring.NOM

The German eqivalent would be the sentence in (10):

(10) ?? Mich dünkt der Mann langweilig. (German)
I.ACC thinks the.NOM man boring
'I think the man is boring.'

However, *dünkt* is archaic and is usually used with a *dass* clause – if it is used at all. But there is a non-archaic verb that has a similar form:

(11) Mir scheint der Mann langweilig. (German)
I.DAT seems the.NOM man boring
'The man seems boring to me.'

The experiencer of *scheinen* 'to seem' is expressed with the dative, while the subject of the embedded predicate *langweilig* 'boring' is in the nominative.

7.1.1.2 Subjects in control constructions

Zaenen, Maling & Thráinsson (1985: Section 2.7) discuss control structures in which the subject of the embedded verb is not expressed. (12a) shows an example of normal control in which the subject of the matrix verb *vonast* 'to hope' refers to the same discourse referent as the subject of the embedded verb *fara* 'to go'. (12b) is an example of so-called arbitrary control. In cases of arbitrary control there is no element depending on the head that governs the infinitive that refers to the same discourse referent as the subject of the infinitive. The unexpressed subject corresponds to a pronoun *one* that is used generically. In example (22b) *óvenjulegt* 'unusual' does not select for an argument that refers to the same referent as the subject of *fara* 'to go'. The subject of *að fara heim snemma* 'to go home early' is not expressed but is understood as the indefinite pronoun *one*.

(12) a. Ég vonast til að fara heim. (Icelandic)
I hope for to go home
'I hope to go home.'
b. Að fara heim snemma er óvenjulegt.
to go home early is unusual
'It is unusual to go home early.'

Now, it can be observed that Icelandic allows verbs that do not take a nominative in such control constructions. An example is *vantar* ('lacks'), which takes two accusatives rather than a nominative and an accusative:

(13) Mig vantar peninga. (Icelandic)
I.ACC lack money.ACC

(14) shows that this verb can be embedded under *vonast* ('to hope'):

(14) Ég vonast til ab vanta ekki peninga. (Icelandic)
I hope for to lack not money.ACC
'I hope that I do not lack money.'

This should be compared with German:

(15) a. Mir fehlt kein Geld. (German)
I.DAT lacks no.a.NOM money
'I do not lack money.'

b. * Ich hoffe, kein Geld zu fehlen.
I hope not.a.NOM money to lack
Intended: 'I hope that I do not lack money.'

The question at the beginning of this section was whether the datives and genetives in sentences like (4) – repeated here as (16) – are subjects or not.

(16) a. Hennar var saknað. (Icelandic)
she.GEN was missed
'She was missed.'

b. Þeim var hjalpað.
they.DAT was helped
'They were helped.'

We are now able to use the tests to answer this question: the dative is right-adjacent to the finite verb in the question in (17) and hence in subject position.

(17) a. Var hennar saknað? (Icelandic)
was she.GEN missed
'Was she missed?'

b. Var Þeim hjálpað?
was they.DAT helped
'Were they helped?'

Similarly the dative follows the finite verb in the V2 sentence in (18):

(18) Í prófinu var honum vist hjálpað. (Icelandic)
in the.exam was he.DAT apparently helped
'Apparently he was helped in the exam.'

In addition these datives can be omitted in control constructions as the examples in (19) show:

(19) a. Ég vonast til að verða hjálpað. (Icelandic)
I hope for to be helped

b. Að vera hjálpað i prófinu er óleyfilegt.
to be helped in the.exam is un.allowed
'It is not allowed to be helped in the exam.'

This should be compared to German: While verbs like *unterstützen* 'to support' that govern a nominative and an accusative can appear in such control constructions, verbs like *helfen* 'to help' that take a nominative and a dative are ruled out in this construction:

(20) a. dass jemand ihm hilft (German)
that somebody him.DAT helps
b. dass jemand ihn unterstützt
that somebody him.ACC supports
c. dass ihm geholfen wird
that him.DAT helped is
d. dass er unterstützt wird
that he.NOM supported is

(21) a. Ich hoffe unterstützt zu werden. (German)
I hope supported to be
b. * Ich hoffe geholfen zu werden.
I hope helped to be

The dative object cannot be omitted in such control constructions as (21b) shows. The only way to realize a passive below *hoffen* is to use the dative passive with *erhalten*/*bekommen*/*kriegen*. The dative passive can turn a dative object into a nominative subject:

(22) Aicke bekommt geholfen. (German)
Aicke.NOM gets helped
'Aicke gets helped.'

Since the object of *helfen* is then nominative and hence undoubtfully a subject in German, it does not come with a surprise that it can be omitted in control constructions like (23):

(23) Ich hoffe hier geholfen zu bekommen.[2] (German)
I hope here helped to get
'I hope to get help here.'

[2] http://www.photovoltaikforum.com/sds-allgemein-ueber-solar-log-f38/solarlog-1000-mit-wifi-anschliesen-t96371.html. 10.01.2014

7.1.2 Comparison German, Danish, English, Icelandic

In the following subsections I want to compare several dimensions in which the Germanic languages vary:

- Danish and Icelandic have a morphological passive, English and German do not.
- German, Icelandic allow for subjectless constructions, Danish and English do not.
- Danish, German and Icelandic allow for impersonal passives, English does not.
- Danish and Icelandic allow both objects to be promoted to subject, English and German do not.
- German has the so-called remote passive, Danish the so-called complex passive and Danish and English have the so-called reportive passive.

7.1.2.1 Morphological and Analytic Forms

Danish allows for a morphological passive. It is formed by appending the *-s* suffix and there are present tense (24b) and past forms (24c):

(24) a. Peter læser avisen. (Danish)
Peter reads newspaper.DEF
'Peter is reading the newspaper.'

b. Avisen læses af Peter.
newspaper.DEF read.PRES.PASS by Peter
'The newspaper is read by Peter.'

c. Avisen læstes af Peter.
newspaper.DEF read.PAST.PASS by Peter
'The newspaper was read by Peter.'

Danish also allows for the analytic form with *blive* 'be' and participle:

(25) Avisen bliver læst af Peter. (Danish)
newspaper.DEF is read by Peter
'The newspaper is read by Peter.'

The morphological passive may also apply to infinitives:

(26) Avisen skal læses hver dag. (Danish)
newspaper.def must read.INF.PASS every day
'The newspaper must be read every day.'

English and German only have the analytic variant:

(27) a. The paper was read.
b. Der Aufsatz wurde gelesen. (German)
the.NOM paper was read

7.1.2.2 Personal and impersonal Passive

All languages under consideration allow for the promotion of an accusative object to subject. As the following examples show, the subject can be an S or a VP:

(28) a. At regeringen træder tilbage, bliver påstået. (Danish)
that government.DEF resigns PART is claimed
'It is claimed that the government resigns.'
b. At reparere bilen, bliver forsøgt.
to repair car.DEF is tried
'It is tried to repair the car.'

In addition to such personal passives, Danish, German, and Icelandic allow for impersonal passives. Since German does not require a subject, impersonal passives like (29) are expected:

(29) weil noch getanzt wurde (German)
because still danced was
'because there was still dancing there'

The following two examples from Icelandic show that Icelandic also knows impersonal constructions (Thráinsson 2007: 264):

(30) a. Oft var talað um þennan mann. (Icelandic)
often was talked about this Mann.ACC.SG.M
b. Aldrei hefur verið sofið í þessu rúmi.
never has been slept in this bed.DAT
'This bed has never been slept in.'

Danish also allows for impersonal passives but it differs from the languages discussed so far in that it requires an expletive subject:

(31) a. at der bliver danset (Danish)
that EXPL is danced
'that there is dancing'

b. at der danses
that EXPL dance.PRES.PASS
'that there is dancing'

c. * Bliver danset?
is danced

d. * Danses?
dance.PASS

So Danish is like English in always requiring a subject, but while this constraint results in the impossibility of impersonal passives in English, Danish found a solution to the subject problem by inserting an expletive.

Expletives are excluded in German impersonal constructions:

(32) * weil es noch gearbeitet wurde (German)
because it still worked was
Intended: 'because there was still working there'

7.1.2.3 Promotion of the primary and secondary object

English and German allow the promotion of one of the objects of a ditransitive verb only. (33) shows that the accusative object can be realized as subject, but the dative cannot:

(33) a. weil der Mann dem Jungen den Ball schenkt
because the.NOM man the.DAT boy the.ACC ball gives (German)
'because the man gives the boy a ball as a present'

b. weil dem Jungen der Ball geschenkt wurde
because the.DAT boy the.NOM ball given was
'because the ball was given to the boy'

c. * weil der Junge den Ball geschenkt wurde
because the.NOM boy the.ACC ball given was

Similarly, English can realize the first object as subject, but the second object cannot be promoted to subject:

(34) a. because the man gave the boy the ball
b. because the boy was given the ball
c. * because the ball was given the boy

The information structural effect can be reached with a different lexical variant of *give* though. *give* can be used with an NP object and a *to* PP instead of two NPs as in (35a). The first object of the ditransitive *give* is realized as PP in (35a) and the second object *the ball* is the first object in (35a). This alternation is also called dative-shift.

(35) a. because the man gave the ball to the boy
b. because the ball was given to the boy

(36b) is the passive variant of (35a). As in (34b), the primary object is promoted to subject.

Danish and Icelandic differ from English and German. In the former languages both objects can be promoted to subject without any previous alternation of valence frames like dative shift.

(36) a. fordi manden giver drengen bolden (Danish)
because man.DEF gives boy.DEF ball.DEF
'because the man gives the boy the ball'
b. fordi drengen bliver givet bolden
because boy.DEF is given ball.DEF
'because the boy is given the ball'
c. fordi bolden bliver givet drengen
because ball.DEF is given boy.DEF
'because the ball is given to the boy'

One could assume that it is always the first object (the primary object) that is promoted to subject and that Danish does not have an order of the objects, so that both objects are equally prominent and can be promoted to subject. Moro is a language that is said to have such properties (Ackerman et al. 2013). However, Danish differs from Moro in that the order of the objects in sentences is clearly fixed: While (36a) is possible, the reverse order of the objects is ungrammatical as (37) shows.

(37) * fordi manden giver bolden drengen

As far as Icelandic is concerned, Zaenen, Maling & Thráinsson (1985: 460) note that apart from the possibility to promote the accusative to subject, the dative can become a quirky subject:

(38) Konunginum voru gefnar ambáttir.
the.king.DAT were given.F.PL maidservants.NOM.F.PL
'The king was given female slaves.'

The structure of (38) is sketched in (39):

(39) [S_i Aux $_i$ V O]

Since the nominative is serialized after the participle it cannot be the subject, which implies that the fronted dative element is the subject.

Alternatively the accusative object is promoted to subject:

(40) Ambáttin var gefin konunginum.
the.maidservant.NOM.SG was given.F.SG the.king.DAT
'The female slave was given to the king.'

This sentence also has the structure in (39).

In order to show that the dative is really promoted to subject in (38) and the accusative is promoted to subject in (40), Zaenen, Maling & Thráinsson (1985: 460) apply a battery of tests. I only give the V2 examples with an adjunct in initial position, the questions, and the control structures here. The examples in (41) and (42) show that the sentences above really have the structure in (39). The first position in (41) is filled by an adjunct, which entails that the subject remains in subject position and hence shows that the dative *konunginum* 'the king' is the subject. Similarly the nominative *ambfittin* is the subject in (40b).

(41) a. Um veturinn voru konunginum gefnar ambfittir.
in the.winter were the.king.DAT given slaves.NOM
'In the winter, the king was given (female) slaves.'

b. Um veturinn var ambfittin gefin konunginum.
in the.winter was the.slave.NOM given the.king.NOM
'In the winter, the slave was given to the king.'

The questions in (42) are further evidence. The initial position is not filled and the dative in (42a) and the nominative in (42b) is realized prenominally.

(42) a. Voru konunginum gefnar ambfittir?
were the.king.DAT given slaves.NOM
'Was the king given slaves?'

b. Var ambfittin gefin konunginum?
was the.slave.NOM given the.king.DAT
'Was the slave given to the king?'

(43) shows the respective control examples:

(43) a. Að vera gefnar ambáittir var mikill heiður.
to be given slaves.NOM was great honor
'To be given slaves was a great honor.'

b. Að vera gefin konunginum olli miklum vonbrigðum.
to be given the.king.DAT caused great disappointment
'To be given to the king caused great disappointment.'

In (43a) the dative is not expressed and in (43b) the nominative is omitted. This shows that both the primary and the secondary object can be promoted to subject in Icelandic, even though one of them has structural and the other one lexical case.

7.2 The Analysis

7.2.1 Structural and lexical case and the Case Principle

In order to analyze the passive it is useful to distinguish between structural and lexical case. Structural case is case that depends on the syntactic structure in which arguments get realized, while lexical case is case that stays constant independent of the syntactic environment. In addition to lexical and structural case there is semantic case. This case is not assigned by a governing head like a verb, adjective or preposition but is due to a certain function of an adverbial. For instance time expressions like *den ganzen Tag* 'the whole day' in (44) are in the accusative in German.

(44) Er arbeitet den ganzen Tag. (German)
he.NOM works the.ACC whole day
'He works the whole day.'

Since this chapter is about the passive and its variation in the Germanic languages, I will ignore semantic case here.

7.2.1.0.1 Nominatives and accusative objects

Until now the case that an argument gets assigned by its head was represented in the valency list of the head. With such a representation we would need two

different lexical items for the verb *lesen* ('to read'): one in which the verb takes a nominative and an accusative as in (45c) and one in which it takes two accusatives as in (45d).

(45) a. Er wird das Buch lesen. (German)
he.NOM will the.ACC book read
'He will read the book.'

b. Ich sah ihn das Buch lesen.
I saw him the book read
'I saw him read the book.'

c. ⟨ NP[*nom*], NP[*acc*] ⟩

d. ⟨ NP[*acc*], NP[*acc*] ⟩

Rather than having these two lexical items, one can have just one lexical item and leave the actual case assignment for later. So depending on whether the subject of *lesen* is realized as the subject of *wird* or as the object of *sah* 'saw', it gets nominative or accusative. Such cases are called structural cases. The distinction between structural and lexical case will play an important role in the analysis of passive. It is this distinction that makes a unified analysis of the so-called personal and impersonal passive possible.

(46) provides additional examples and involves different forms of the verb (finite vs. non-finite) and a nominalization:

(46) a. Der Installateur kommt.
the plumber comes
'The plumber comes.'

b. Der Mann läßt den Installateur kommen.
the man lets the plumber come
'The man lets the plumber come.'

c. das Kommen des Installateurs
the coming of.the plumber
'the coming of the plumber'

The example in (46c) also shows that the subject of *kommen* 'to come' can be realized as genetive. So, nominative, genitive, and accusative are structural cases in German. (The question whether some or all datives should be treated as structural case is addressed below).

The examples in (46) show that the case of subjects in German can change, those in (47) show that the case of accusative objects can change as well:

(47) a. Judit schlägt den Weltmeister.
Judit defeats the.ACC world.champion
'Judit defeats the world champion.'

b. Der Weltmeister wird geschlagen.
the.NOM world.champion is beaten
'The world champion is beaten.'

7.2.1.0.2 Genitive objects

The examples in (48) show instances of lexical case: Genitive that depends on the verb is lexical since it does not change when the verb is passivized.

(48) a. Wir gedenken der Opfer.
we.NOM remember the victims.GEN
'We remember the victims.'

b. Der Opfer wird gedacht.
the.GEN victims is remembered
'The victims are remembered.'

c. * Die Opfer wird / werden gedacht.
the.NOM victims is are remembered

As the example in (48c) shows, the nominative is impossible. The genitive object remains in the genitive in passive constructions. Passives without a subject as in (48b) are traditionally called impersonal passives.

7.2.1.0.3 Dative objects

Now, lets turn to the dative. If we look at examples like (49), we see that the dative does not change either in the passive:

(49) a. Der Mann hat ihm geholfen.
theNOM man has him.DAT helped
'The man helped him.'

b. Ihm wird geholfen.
him.DAT is helped
'He is helped.'

So in analogy to the genitive examples above, the dative should be a lexical case.

But there are examples like those in (50) and according to the view that structural cases are those cases that vary according to the syntactic environment, the dative should be a structural case.

(50) a. Der Mann hat den Ball dem Jungen geschenkt.
the man has the ball the boy given
'The man gave the boy the ball as a present.'
b. Der Junge bekam den Ball geschenkt.
the boy got the ball given
'The boy got the ball as a present.'

The question whether the dative should be seen as a structural or a lexical case is a hotly debated one. In principle there are three possibilities and all three of them were suggested in the literature. One could assume that all datives are lexical, that some are lexical and others are structural, or that all datives are structural.

I follow Haider (1986a) and treat all datives as lexical cases. Under this assumption, the contrast in Haider's examples (1986a: 20) in (51) is explained immediately:

(51) a. Er streichelt den Hund.
he.NOM strokes the.ACC dog
b. Der Hund wurde gestreichelt.
the.NOM dog was strocked
c. sein Streicheln des Hundes
his strocking of.theġen dog
d. Er hilft den Kindern.
he helps the.DAT children
e. Den Kindern wurde geholfen.
the.DAT children was helped
f. das Helfen der Kinder
the helping of.the children
g. * sein Helfen der Kinder
his helping the children

The accusative object of *streicheln* 'to stroke' can be realized as nominative in the passive, so it is clearly a structural case. Nominalizations allow this object to be realized in the genitive as (51c) shows. However, this does not work with datives. The dative object of *helfen* 'to help' cannot be realized in the genitive. (51f) is

possible, but only with a reading in which the children are the agents, that is, the nominalization in (51f) corresponds to (52) rather than (51d):

(52) Die Kinder helfen jemandem.
the.NOM children help somebody

If the agent is expressed by a prenominal possessive as in (51g) the genetive or dative *der Kinder* is ruled out.

The only way to express the dative at all is prenominally:

(53) das Den-Kindern-Helfen
the the-children-helping
'the children's helping'

So, authors who assume that all datives are structural have a problem explaining the differences in impersonal passives and nominalizations. In addition there is a problem with bivalent verbs. While some verbs take the dative others take the accusative although there is hardly any semantic difference or any other reason that could be made responsible.

(54) a. Er hilft ihm.
he helps him

b. Er unterstützt ihn.
he supports him

The fact that *helfen* takes a dative object, while *unterstützen* takes an accusative is just an idiosyncrasy of German that speakers of German have to learn when they acquire the language. So, the information in the lexical entry for *helfen* must be different from the one for *unterstützen*. Some authors acknowledge this difference and assume that the dative of bivalent verbs is lexical, while the dative of ditransitive verbs is structural. The assumption is that verbs assign the nominative to their first argument, the accusative to their last argument and if there is an additional argument that is neither the first nor the last, it gets dative. The prediction that such mixed accounts make is that the dative passive should be possible with ditransitive verbs but impossible with bivalent verbs, since the dative is structural for the former verbs and lexical for the latter. The empirical situation is not as clear-cut as one might wish. Some authors accept examples like (55). Others reject them.

(55) a. Er kriegte von vielen geholfen / gratuliert / applaudiert.
he got by many helped congratulated applauded

b. Man kriegt täglich gedankt.
one gets daily thanked

However, there are attested examples:

(56) a. „Da kriege ich geholfen.“[3]
b. Heute morgen bekam ich sogar schon gratuliert.[4]
c. „Klärle“ hätte es wirklich mehr als verdient, auch mal zu einem „unrunden“ Geburtstag gratuliert zu bekommen.[5]
d. Mit dem alten Titel von Elvis Presley „I can’t help falling in love“ bekam Kassier Markus Reiß zum Geburtstag gratuliert, […][6]

I think that the verbs *kriegen*, *erhalten*, and *bekommen* are on the way to become auxiliaries. Their meaning is getting more and more bleached. Hence there are almost no selectional restrictions left on the downstairs verb. The only requirement for the dative passive to apply is of course that the embedded verb governs a dative.

Now, if the dative passive is possible with verbs bivalent like *helfen* and if *helfen* has to govern a lexical dative (since otherwise the difference between *helfen* and *unterstützen* could not be explained), it follows that the dative passive must be able to convert a lexical dative into a structural case (realized as nominative in the examples above). This means that one could assume that all datives are lexical, even the datives of ditransitive verbs. This explains why these datives are not realized as nominatives or accusatives in passives like (57):

(57) a. dass er dem Jungen den Ball gegeben hat
that he.NOM the.DAT boy the.ACC ball given has
b. dass dem Jungen der Ball gegeben wurde
that the.DAT boy the.NOM ball given was
c. * dass der Junge den Ball gegeben wurde
that the.NOM boy the.ACC ball given was
d. * dass den Junge der Ball gegeben wurde
that the.ACC boy the.NOM ball given was

They just stay dative. The only exception is the dative passive and this has to be analyzed as an exception.

[3] Frankfurter Rundschau, 26.06.1998, p. 7.
[4] Brief von Irene G. an Ernst G. vom 10.04.1943, Feldpost-Archive mkb-fp-0270
[5] Mannheimer Morgen, 28.07.1999, Lokales; „Klärle“ feiert heute Geburtstag.
[6] Mannheimer Morgen, 21.04.1999, Lokales; Motor des gesellschaftlichen Lebens.

After this discussion of lexical and structural case in German, I will provide the Case Principle, which is responsible for case assignment. As was explained in Section 4.8, it is assumed that all arguments of a head are represented in one list: the ARGUMENT STRUCTURE list (ARG-ST list). (58) shows the argument structure list of a ditransitive verb like *geben* 'to give':

(58) ⟨ NP[*str*], NP[*ldat*], NP[*str*] ⟩

As was argued above, dative is treated as a lexical case. *ldat* is an abbreviation for lexical dative and *str* stands for for structural case. The Case Principle has the following form (adapted from Przepiórkowski 1999; Meurers 1999):

Principle 1 (Case Principle)

- *In a list that contains both the subject and the complements of a verbal head, the first element with structural case gets nominative unless it is raised by a higher head.*
- *All other elements in this list that have structural case and are not raised get accusative.*
- *In nominal environments elements with structural case get genitive.*

This principle is inspired by Yip, Maling & Jackendoff (1987) and as will be demonstrated below it also works for the complex case system in Icelandic. It differs for in not assigning case to elements that are raised to a higher predicate. This point will be explained in more detail below.

The effect of this principle will be explained with respect to the verbs in (59):

(59) a. *schläft* 'sleep': ARG-ST $\langle$ NP[*str*]$_i$ $\rangle$

b. *unterstützt* 'support': ARG-ST $\langle$ NP[*str*]$_i$, NP[*str*]$_j$ $\rangle$

c. *hilft* 'help': ARG-ST $\langle$ NP[*str*]$_i$, NP[*ldat*]$_j$ $\rangle$

d. *schenkt* 'give as a present': ARG-ST $\langle$ NP[*str*]$_i$, NP[*ldat*]$_j$, NP[*str*]$_k$ $\rangle$

The first element in these lists that has structural case gets nominative and the second one accusative. This is exactly what one expects. The result is given in (60). *snom* stands for structural nominative.

(60) a. *schläft* 'sleep': ARG-ST $\langle$ NP[*snom*]$_i$ $\rangle$

b. *unterstützt* 'support': ARG-ST $\langle$ NP[*snom*]$_i$, NP[*sacc*]$_j$ $\rangle$

c. *hilft* 'help': ARG-ST $\langle$ NP[*snom*]$_i$, NP[*ldat*]$_j$ $\rangle$

d. *schenkt* 'give as a present': ARG-ST $\langle$ NP[*snom*]$_i$, NP[*ldat*]$_j$, NP[*sacc*]$_k$ $\rangle$

7.2.2 Argument reduction and case assignment: The passive

Now, with the structural/lexical case distinction the analysis of the passive is really simple and directly corresponds to the intuition that the passive is the suppression of the subject (the most prominent, that is, the first argument in the ARG-ST list). If the first argument is removed from the lists in (59), the following lists result:

(61) a. *geschlafen*: ARG-ST $\langle\ \rangle$

b. *unterstützt*: ARG-ST $\langle$ NP[*str*]$_j$ $\rangle$

c. *geholfen*: ARG-ST $\langle$ NP[*ldat*]$_j$ $\rangle$

d. *geschenkt*: ARG-ST $\langle$ NP[*ldat*]$_j$, NP[*str*]$_k$ $\rangle$

The NPs that are in the first position in (61) where in the second position in (60). The first NP with structural case gets nominative and hence the following case assignments result:

(62) a. *geschlafen*: ARG-ST $\langle\ \rangle$

b. *unterstützt*: ARG-ST $\langle$ NP[*snom*]$_j$ $\rangle$

c. *geholfen*: ARG-ST $\langle$ NP[*ldat*]$_j$ $\rangle$

d. *geschenkt*: ARG-ST $\langle$ NP[*ldat*]$_j$, NP[*snom*]$_k$ $\rangle$

Lexical case as in (62c–d) is not affected by the case principle, it stays the way it was specified, namely dative.

It should be noted here that this simple approach to passive accounts both for the so-called personal and the impersonal passive. The passives of *schlafen* 'to sleep' and *helfen* 'to help' are called impersonal passives since the respective clauses do not have a subject.

(63) a. dass geschlafen wurde
that slept was
'that there was sleeping there'
b. dass dem Mann geholfen wurde
that the.DAT man helped was
'that the man was helped'

The passives of *unterstützen* 'to support' and *schenken* 'to give as a present' do have subjects, namely the arguments that are realized as accusative objects in the active:

(64) a. dass der Mann unterstützt wurde
that the.NOM man supported was
'that the man was supported'
b. dass dem Jungen der Ball geschenkt wurde
that the.DAT boy theNOM ball given was
'that the ball was given to the boy as a present'

Those analyses that assign all cases lexically would have to assume that the case of the objects (accusative) is changed into nominative in the passive. Hence there would be two variants of the passive: The impersonal passive just suppresses the subject and the personal one suppresses the subject and additionally changes the case of the object into nominative. The analysis using the structural/lexical case distinction just postpones the case assignment until the point where it is clear what the right case will be. If we have a participle and use it with the passive auxiliary it is clear what the case of the arguments has to be.

7.2.3 Argument extension and case assignment: AcI constructions

The case principle contains restrictions on case assignment that prohibits the assignment to elements that are raised. These restrictions have not been explained yet. Consider the examples in (65):

(65) a. Der Junge liest den Aufsatz.
the.NOM boy reads the.ACC paper
'The boy reads the paper.'
b. Der Mann läßt den Jungen den Aufsatz lesen.
the.NOM man lets the.ACC boy the.ACC paper read
'The man lets the boy read the paper.'

The example (65a) shows that the subject of *lesen* is assigned nominative. However, the subject of *lesen* gets accusative in (65b). So, if one would assign case on the basis of the argument structure of *lesen* in (65b), one would assign nominative, but the AcI verb *lassen* 'to let' assigns accusative to its object. The point is that the subject of *lesen* is raised to the object of *lassen*. The Case Principle is set up in a way such that case is assigned only to those arguments that are not raised to a higher head. Hence, *den Jungen* does not get case from *lesen*, but from *lässt*.

The analysis of (65b) is given in Figure 7.1. The arguments of *lesen* 'to read'

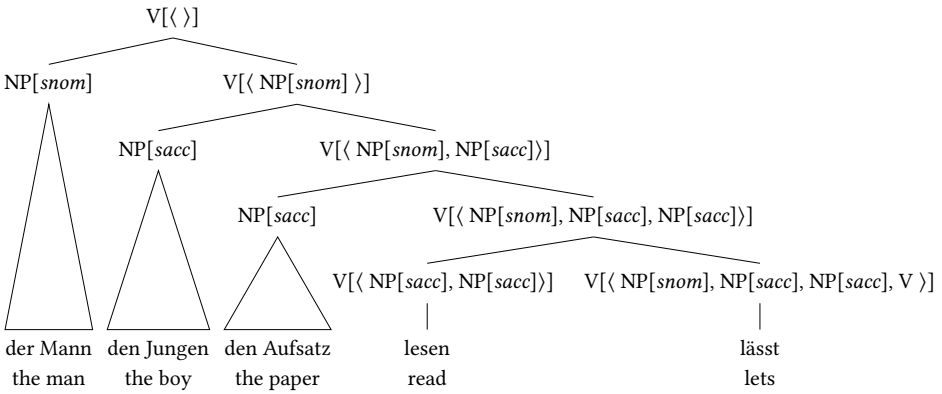

Figure 7.1: Analysis of AcI constructions as raising constructions and the verbal complex in German

are taken over by *lässt*. Since *lässt* contributes its own argument, the causer or the one who gives the permission, *lässt* selects for three NPs with structural case and a verb in the specific sentence depicted in Figure 7.1. According to the Case Principle the first NP with structural case gets nominative and the other NPs with structural case get accusative. This results into a list with one NP in the nominative and two NPs in the accusative.

(66) shows the ARG-ST list of *lässt* when it is combined with *schlafen*, *unterstützen*, *helfen*, or *schenken*, respectively.

(66)

a. *läßt* with *schlafen*: ARG-ST ⟨ NP[*str*]$_l$, NP[*str*]$_i$, V⟩

b. *läßt* with *unterstützen* : ARG-ST ⟨ NP[*str*]$_l$, NP[*str*]$_i$, NP[*str*]$_j$, V ⟩

c. *läßt* with *helfen*: ARG-ST ⟨ NP[*str*]$_l$, NP[*str*]$_i$, NP[*ldat*]$_j$, V ⟩

d. *läßt* with *schenken*: ARG-ST ⟨ NP[*str*]$_l$, NP[*str*]$_i$, NP[*ldat*]$_j$, NP[*str*]$_k$, V ⟩

The NP that is added has the index *l*. As the first NP with structural case on these lists it gets nominative. All other elements of this list that have structural case get accusative. Hence the subject of the embedded verb is assigned accusative, the lexical cases stay the same and the accusative objects of the embedded verb get accusative as well, since their case is structural too.

Note that the question of whether a language has a verbal complex or not is orthogonal to issues of case assignment. Figure 7.2 shows the analysis of the English translation of (65b). *let* selects for the subject, the object and a VP. The sub-

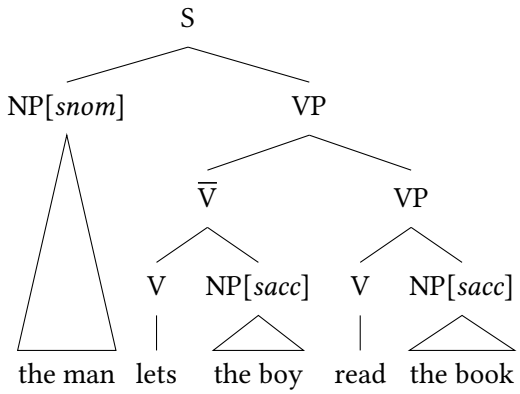

Figure 7.2: AcI constructions in English

ject of *read* is simultaneously the object of *let* and hence the Case Principle does not assign nominative to the subject of the embedded verb *read*, but accusative to the object of the matrix verb *let*.

7.2.4 Theoretical analysis of the crosslinguistic differences

Argument reduction and case assignment was already explained for German in Section 7.2.2. I want to get a little bit more explicit now and provide lexical items for the passive and perfect auxiliary for German. After this I discuss the other

languages and explain how the differences can be dealt with in a worked out analysis.

7.2.4.1 Designated Argument Reduction

Haider (1986a) suggested marking the argument of a verb that has subject properties. He calls these special arguments *designated argument*. Heinz & Matiasek (1994) transferered this idea to HPSG and Müller (2003b) modified it slightly to get certain facts with modal infinitives right. One important use of the designated argument is to distinguish so-called unaccusative verbs from unergative verbs. Perlmutter (1978) pointed out that unaccusative verbs have remarkable properties and argued that their subjects are not really subjects but behave more like objects. One of their properties is that they do not allow for passives. Furthermore their participles can be used attributively which is usually not possible:

(67) a. der angekommene Zug
the arrived train
'the arrived train'

b. * der geschlafene Mann
the slept man

This is explained if one assumes that the subject of *ankommen* 'arrive' is indeed like an object. As an object it patterns with the object of transitive verbs:

(68) der geliebte Mann
the beloved man

Mann 'man' fills the object slot of *geliebte*. If the sole argument of *ankommen* is treated as an object, the similarity to the transitive *lieben* is explained immedeately. Similarly the fact that unaccusatives do not allow for passives is explained: If passive is the suppression of the subject and *ankommen* does not have a subject in that sense, passive cannot apply.

(69) a. Der Zug ist angekommen.
the train is arrived
'The train arrived.'

b. * weil angekommen wurde
because arrived was

In the HPSG analyses the authors assume that there is a list-valued feature DESIGNATED ARGUMENT (DA). This list contains the subject of transitive and unerga-

tive verbs (intransitive verbs that are not unaccusative). The DA value of unaccusative verbs is the empty list, since these verbs do not have an argument with subject properties.

The passive is analyzed as a lexical rule that licences a lexical item for the participle. The ARG-ST list of the particple is the ARG-ST list of the verb stem that is the input to the lexical rule minus the DA list. Since this is not the focus of this book, I will not discuss unaccusative verbs in the following. (70) provides some prototypical examples for unergative and transitive verbs:

(70)

	ARG-ST	DA
a. tanzen (dance):	⟨ 1NP[*str*] ⟩	⟨ 1 ⟩
b. lesen (read):	⟨ 1NP[*str*], NP[*str*] ⟩	⟨ 1 ⟩
c. schenken (give as a present):	⟨ 1NP[*str*], NP[*ldat*], NP[*str*] ⟩	⟨ 1 ⟩
d. helfen (help):	⟨ 1NP[*str*], NP[*ldat*] ⟩	⟨ 1 ⟩

The lexical rule that forms the participle is sketched in (71):

(71) Lexical rule for the formation of the participle (preliminary):

$$\begin{bmatrix} \textit{stem} \\ \textsc{head} \quad \begin{bmatrix} \textit{verb} \\ \textsc{da} \ \boxed{1} \end{bmatrix} \\ \textsc{arg-st} \ \boxed{1} \oplus \boxed{2} \end{bmatrix} \mapsto \begin{bmatrix} \textit{word} \\ \textsc{arg-st} \ \boxed{2} \end{bmatrix}$$

This rule splits the ARG-ST list of the input into two lists 1 and 2. 1 is identical to the DA value. Therefore the designated argument is taken off the ARG-ST list and is not present in the lexical item that is licensed by the rule.

The ARG-ST list of the participle that is licensed is either empty (72a) or starts with an object of the active form:

(72)

	ARG-ST
a. getanzt (danced, unerg):	⟨⟩
b. gelesen (read, trans):	⟨NP[*str*]⟩
c. geschenkt (given, ditrans):	⟨NP[*ldat*], NP[*str*]⟩
d. geholfen (helped, unerg):	⟨NP[*ldat*]⟩

As was explained above, the first element in the ARG-ST list with structural case gets nominative and hence the accusative object of *lesen* in (73a) is realized as nominative in (73b):

(73) a. Er liest den Aufsatz.
he.NOM reads the.ACC paper
b. Der Aufsatz wurde gelesen.
the.NOM paper was read

English differs from German in not having a dative case at all. I am talking about morphological markings here, not about semantics. Therefore both objects of English ditransitive verbs are accusative objects. However, only one of the objects can be promoted to subject. This is modeled in the analysis at hand by assuming that the secondary object bears lexical accusative (see also Grewendorf (2002: 57) for the assumption of lexical accusative for the secondary object in English).[7]

(74) ARG-ST
b. dance (unerg): ⟨NP[*str*]⟩
c. read (trans): ⟨NP[*str*], NP[*str*]⟩
d. give (ditrans): ⟨NP[*str*], NP[*str*], NP[*lacc*]⟩
e. help (trans): ⟨NP[*str*], NP[*str*]⟩

German can promote the second object (accusative) and English the first one. The commonality is that the object that is closer to the verb can be promoted. This is the accusative for German since nominative, dative, accusative is the unmarked order and German is a OV language and the first accusative in English since English is a VO language.

(75) a. dass dem Jungen der Ball gegeben wurde
that the.DAT boy the.NOM ball given was
'that the ball was given to the boy'
b. because the boy was given the ball

A further difference is the lexical item for *help*. Since there is no dative in English, the object is marked accusative as it is the case for *read*. Interestingly, English allows for the personal passive of *help*, while this is not possible in German:

(76) a. because he was helped

[7] Admittidly this is just a restatement of the facts, since assigning lexical case means that the argument under consideration cannot have another case. But taken together with constraints on subjects in English the facts about promotion or non-promotion of arguments follow nicely.

b. weil ihm geholfen wurde
because he.DAT helped was

c. * weil er geholfen wurde
because he.NOM helped was

7.2.4.2 Primary and secondary objects

In this section I want to look at languages that allow both objects to be promoted. Danish is like English in not having a dative. This is refelcted in the following ARG-ST values:

(77) ARG-ST

a. danse (dance, unerg): $\langle \text{NP}[str]_i \rangle$

b. læse (read, trans): $\langle \text{NP}[str]_i, \text{NP}[str]_j \rangle$

c. give (give, ditrans): $\langle \text{NP}[str]_i, \text{NP}[str]_j, \text{NP}[str]_k \rangle$

d. hjælpe (help, trans): $\langle \text{NP}[str]_i, \text{NP}[str]_j \rangle$

Danish has two objects with structural case, English and German have just one object with structural case and the other one with lexical accusative and lexical dative, respectively. Since English and German do not allow for subjects with lexical case it is clear that the promotion to subject of the argument that bears lexical case is excluded. Danish also disallows subjects with lexical case, but since the two objects have structural case anyway, they both can be promoted.

Note however that the lexical rule in (71) does not account for the promotion of the secondary object. What it does is suppressing the subject. Under the assumption that the first NP with structural case is the subject, the secondary object could never be realized as subject. Note that it would not help to say any NP with structural case can be the subject, since this would admit wrong realizations. In addition to the correct (36a), the following two sentences would be admitted:

(78) a. * fordi drengen giver manden bolden
because boy.DEF gives man.DEF ball.DEF

b. * fordi bolden giver manden drengen
because ball.DEF gives man.DEF boy.DEF

(78a) is ungrammatical with *drengen* 'boy' the recipient of the giving. Similarly the transfered object *bolden* cannot be realized as subject in active sentences. This means that the promotion to subject has to be a part of the lexical rule that licences the participle that is used in the passive. The lexical rule in (79) takes

the ARG-ST list and splits it into two lists. The first list 1 is identical to the value of DA. The second list 2 is the remainder of the ARG-ST list. 2 is related to 3 by the relational constrint `promote`. 3 is either eaqual to 2 or additional provides a list in which another NP with structural case is positioned at the beginning of 3.

(79) Lexical rule for the passive for Danish, English, German, and Icelandic:

$$\begin{bmatrix} \textsc{head} & \begin{bmatrix} \textit{verb} \\ \textsc{da} \ \boxed{1} \end{bmatrix} \\ \textsc{arg-st} \ \boxed{1} \oplus \boxed{2} \end{bmatrix} \mapsto \left[\textsc{arg-st} \ \boxed{3} \right] \wedge \text{promote}(\boxed{2}, \boxed{3})$$

(80) shows the ARG-ST values of our prototypical verbs:

(80)

	ARG-ST
a. danset/-s (dance, unerg):	$\langle\rangle$
b. læst/-s (read, trans):	$\langle \text{NP}[\textit{str}]_j \rangle$
c. givet/-s (give, ditrans):	$\langle \text{NP}[\textit{str}]_j, \text{NP}[\textit{str}]_k \rangle$
	$\langle \text{NP}[\textit{str}]_k, \text{NP}[\textit{str}]_j \rangle$
d. hjulpet/-s (help, trans):	$\langle \text{NP}[\textit{str}]_j \rangle$

The $\text{NP}[\textit{str}]_i$ that is the first element in (77) is suppressed. The effect of `promote` is that there are two different ARG-ST values for the passive variants of *givet* 'to give': one with an ARG-ST list in which $\text{NP}[\textit{str}]_j$ preceedes $\text{NP}[\textit{str}]_k$ and another one in which $\text{NP}[\textit{str}]_j$ follows $\text{NP}[\textit{str}]_k$. The first order corresponds to (36b) – repeated here as (81a) – and the second corresponds to (36c) – repeated here as (81b):

(81) a. fordi drengen bliver givet bolden
because boy.DEF is given ball.DEF
'because the boy is given the ball'

b. fordi bolden bliver givet drengen
because ball.DEF is given boy.DEF
'because the ball is given to the boy'

Before turning to impersonal passives in Danish in the next subsection, I discuss the passive in double object constructions in Icelandic.

The distribution of structural/lexical case in Icelandic is basically the same as in German. The difference is that Icelandic allows for subjects with lexical case and German does not. (82) shows our standard examples in Icelandic:

(82)

	ARG-ST
a. dansa (dance, unerg):	$\langle \text{NP}[str] \rangle$
b. lesa (read, trans):	$\langle \text{NP}[str], \text{NP}[str] \rangle$
c. gefa (give, ditrans):	$\langle \text{NP}[str], \text{NP}[ldat], \text{NP}[str] \rangle$
d. hjálpa (help, trans):	$\langle \text{NP}[str], \text{NP}[ldat] \rangle$

The lexical rule in (79) licences the following participles:

(83)

	ARG-ST	SPR	COMPS
a. dansað (danced, unerg):	$\langle\rangle$	$\langle\rangle$	$\langle\rangle$
b. lesið (read, trans):	$\langle \text{NP}[str]_j \rangle$	$\langle \text{NP}[str]_j \rangle$	$\langle\rangle$
c. gefið (given, ditrans):	$\langle \text{NP}[ldat]_j, \text{NP}[str]_k \rangle$	$\langle \text{NP}[ldat]_j \rangle$	$\langle \text{NP}[str]_k \rangle$
	$\langle \text{NP}[str]_k, \text{NP}[ldat]_j \rangle$	$\langle \text{NP}[str]_k \rangle$	$\langle \text{NP}[ldat]_j \rangle$
d. hjálpað (helped, trans):	$\langle \text{NP}[ldat]_j \rangle$	$\langle \text{NP}[ldat]_j \rangle$	$\langle\rangle$

In addition to the ARG-ST list (83) shows the mapping to the SPR and COMPS features. Since Icelandic allows for quirky subjects the dative argument of 'to help' can be mapped to the SPR list (Wechsler 1995: 147–148). Similarly the two orders of the ARG-ST of 'to give' result in participles with a dative subject and a nominative subject as it is required for the analysis of (42a) and (42b) repeated here as (84):

(84) a. Voru konunginum gefnar ambfittir?
were the.king.DAT given slaves.NOM
'Was the king given slaves?'

b. Var ambfittin gefin konunginum?
was the.slave.NOM given the.king.DAT
'Was the slave given to the king?'

The impersonal passive with 'to dance' is parallel to the German impersonal passive, but the passivization of 'to help' differs since this is an instance of the personal passive in Icelandic.

7.2.4.3 Impersonal passive

As a final point in this subsection let us have a look at the impersonal passive. German and Icelandic do not insist on subjects. So if there is no NP with structural case, the construction in German is subjectless. Similarly Icelandic does not

require a subject: If there is no NP argument, the result is an impersonal passive. An example of the latter case is the passivization of *dansa* 'to dance'. The ARG-ST list is the empty list and therefore the SPR list and the COMPS list are empty as well. Passive participles of verbs that govern an NP and a PP object will have an ARG-ST list that just contains the PP argument. This PP argument will be mapped to the COMPS list and hence a subjectless construction will result.

English does not allow for impersonal passives since it requires an NP or a sentential argument that can serve as a subject. Danish requires a subject as well, but allows for impersonal constructions. The trick that Danish employs is the insertion of an expletive. I assume that the expletive insertion happens during the mapping of the ARG-ST elements to SPR and COMPS. If there is an NP/VP/CP at the beginning of the ARG-ST list, it is mapped to SPR and all other elements are mapped to COMPS. If there is no element that can be mapped to SPR, an expletive is inserted.

(85) shows the mappings for Danish.

(85)

	ARG-ST	SPR	COMPS
a. danset/-s (unerg):	⟨⟩	⟨NP$_{expl}$⟩	⟨⟩
b. læst/-s (trans):	⟨NP[*str*]$_j$⟩	⟨NP[*str*]$_j$⟩	⟨⟩
c. givet/-s (ditrans):	⟨NP[*str*]$_j$, NP[*str*]$_k$⟩	⟨NP[*str*]$_j$⟩	⟨NP[*str*]$_k$⟩
	⟨NP[*str*]$_k$, NP[*str*]$_j$⟩	⟨NP[*str*]$_k$⟩	⟨NP[*str*]$_j$⟩
d. hjulpet/-s (trans):	⟨NP[*str*]$_j$⟩	⟨NP[*str*]$_j$⟩	⟨⟩

7.2.4.4 The passive auxiliary

We now saw how the participle forms of the languages under considerations look like and how they are licensed from lexical entries for stems via lexical rules. What is missing is the lexical items for the auxiliary verbs. Chapter 5 dealt with the analysis of verbal complexes in SOV languages like German, Dutch and Afrikaans and it was pointed out that SVO languages like English and the Scandinavian languages do not form a verbal complex. With this background it may come as a surprise that it is possible to formulate one general constraint covering all the passive auxiliaries in the Germanic languages. The following AVM shows a constraint holding on all ARG-ST lists for passive auxiliary in Germanic languages:[8]

[8] The lexical item of the passive auxiliary used by Müller (2002: 147) and Müller & Ørsnes (2013a: 149) specifies the DA value of the embedded participle to be a referential NP. This excludes the

(86) Passive auxiliary for Germanic languages (*be*, *werden*, *blieve*, etc.):

$$\left[\text{ARG-ST } \boxed{1} \oplus \boxed{2} \oplus \left\langle \begin{bmatrix} \text{VFORM} & \textit{ppp} \\ \text{SPR} & \boxed{1} \\ \text{COMPS} & \boxed{2} \end{bmatrix} \right\rangle\right]$$

When the passive auxiliary in (86) is used in a German grammar, the arguments of the participle (1 and 2) are attracted by the passive auxiliary (Hinrichs & Nakazawa 1989b; 1994). Auxiliaries in the SVO langauges embed a VP. This means that the COMPS value of the embedded verb has to be the empty list. Therefore 2 is the empty list and only the specifier (1) is taken over from the embedded verb.

With the lexical item for the auxiliary in place, we can have a look at some example analyses of passive sentences. Let's start with an English example. The analysis of (87) is shown in Figure 7.3.

(87) The child was given a novel.

The lexical item for the stem *give-* is input to the passive lexical rule. The passive lexical rule licenses the participle *given*. The ARG-ST of *give-* is shortened by the element in the DA list of *give-* (4). The result is an ARG-ST list containing the two NPs that would be the objects in active sentences. The first one (1) is mapped to SPR and the second one (3) to COMPS. The combination of *given* and *a novel* forms a VP (something with an empty COMPS list and an element in the SPR list). The passive auxiliary *was* selects the VP *given a novel*. The specifier of the selected VP (1) is attracted. As the first argument of *was* with structural case, this NP gets nominative. Finally, the VP *was given a novel* is combined with *the child* and we have a complete sentence.

The analysis of the parallel German sentence in (88) is shown in Figure 7.4 on page 162.

(88) dass dem Kind ein Roman gegeben wurde (German)
that the child a novel given was
'that the child was given a novel'

The analysis is similar to the one of the English example but it differs in that the auxiliary and the participle is forming a verbal complex. First, the passive lexical rule applies to a verb stem *geb-* and licenses the particple form *gegeben*. *gegeben* (3) is combined with *wurde* and *wurde* takes over the elements of the COMPS list of *gegeben* ⟨ 1, 2 ⟩. The result of the combination of *gegeben* and *werden* has the COMPS list ⟨ 1, 2 ⟩.

passivization of unaccusative verbs, which have the empty list as the DA value.

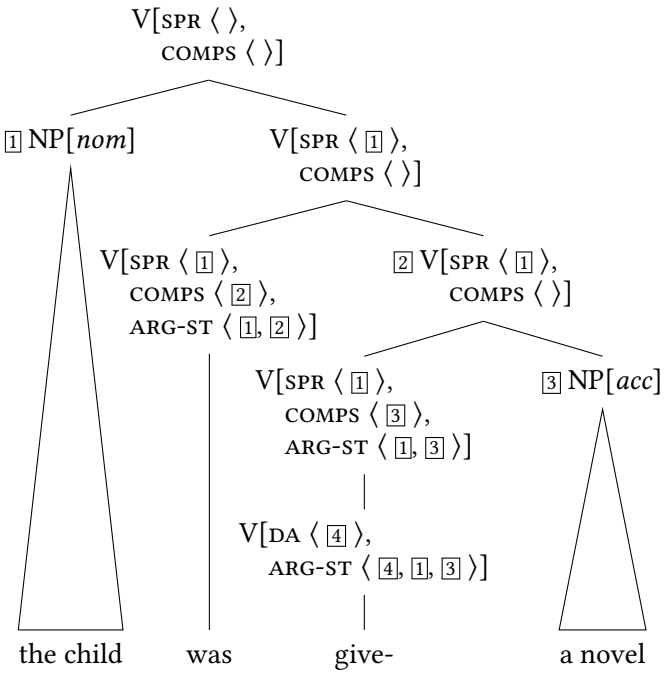

Figure 7.3: Analysis of *The child was given a novel.*

7.2.4.5 The morphological passive

A lexical rule similar to the one accounting for the participle forms can be used for the morphological passives in Danish. One difference is of course the affixal material that is added by the rule. Furthermore, it is assumed for the morphological passive that the DA of the input to the lexical rule has to contain a referential XP. As was discussed in the previous section, this excludes morphological passives of unaccusatives and weather verbs.

7.2.4.6 Perfect

Haider's (1986a) analysis of the passive is brilliant since it is sufficient to have one lexical item for the participle. The participle has a blocked designated argument and in the passive the designated argument remains blocked, while the prefect auxiliary deblocks the designated argument.

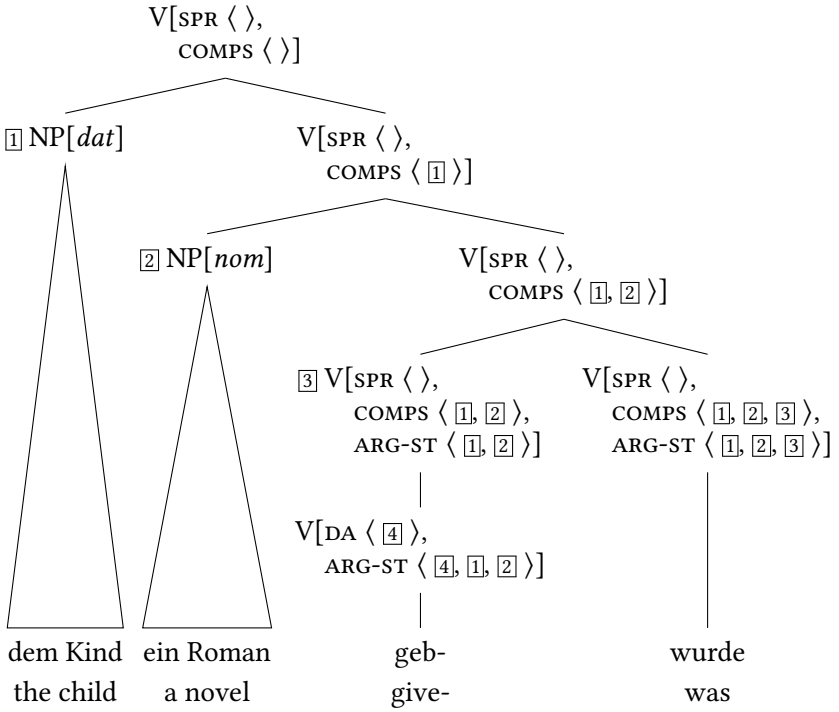

Figure 7.4: Analysis of *dass dem Kind ein Roman gegeben wurde* 'that the child was given a novel'

(89) a. dass der Aufsatz gelesen wurde
that the.NOM paper read was
'that the paper was read'
b. dass Kirby den Aufsatz gelesen hat
that Kirby the.ACC paper read has
'that Kirby has read the paper'

Deblocking of the designated argument is possible since the designated argument is encoded not just in the stem of a verb but also in the lexical item for the participle.

(90) Lexical item for perfect auxiliaries in SOV languages like Dutch and German:

$$\left[\text{ARG-ST } \boxed{1} \oplus \boxed{2} \oplus \boxed{3} \oplus \left\langle \begin{bmatrix} \text{VFORM} & \textit{ppp} \\ \text{DA} & \boxed{1} \\ \text{SPR} & \boxed{2} \\ \text{COMPS} & \boxed{3} \end{bmatrix} \right\rangle\right]$$

Unfortunately Haider's approach does not work for SVO langauges. If we wanted to use the argument blocking/deblocking approach, we had to assume the structures in (91a–b):

(91) a. He [has given] the book to Mary.
b. The book [was given] to Mary.
c. He has [given the book to Mary].
d. The book was [given to Mary].

If we assume that auxiliaries embed VPs as was argued on page 102, we run into problems since the subject of the participle is blocked and the only VP we can form with the participle is the one in (91d), but for the perfect we also need a VP containing the object as in (91c).

7.2.4.7 The remote passive

The so-called *remote passive* is a highlight of German syntax since several phenomena interact in a non-trivial way. It was first discussed by Höhle (1978: 175–176). Höhle observed that objects of German infinitives with *zu* appear in the nominative in certain contexts. (92) provides some constructed examples from the literature:

(92) a. daß er auch von mir zu überreden versucht wurde[9] (German)
that he.NOM also from me to persuade tried got
'that an attempt to persuade him was also made by me'
b. weil der Wagen oft zu reparieren versucht wurde
because the.NOM car often to repair tried was
'because many attempts were made to repair the car'

The examples in (93) are attested data collected from the COSMAS corpus by Müller (2002: 136–137):

(93) a. Dabei darf jedoch nicht vergessen werden, daß in der Bundesrepublik, wo *ein Mittelweg zu gehen versucht wird*, die

[9] Oppenrieder (1991: 212).

Situation der Neuen Musik allgemein und die Stellung der Komponistinnen im besonderen noch recht unbefriedigend ist.[10]

'One should not forget that the situation of the New Music in general and the position of female composers in particular is rather unsatisfying in the Bundesrepublik, where one tries to follow a middle course.'

b. Noch ist es nicht so lange her, da ertönten gerade aus dem Thurgau jeweils die lautesten Töne, wenn im Wallis oder am Genfersee im Umfeld einer Schuldenpolitik mit den unglaublichsten Tricks *der sportliche Abstieg zu verhindern versucht wurde*.[11]

'It still is not too long ago that the loudest protests were heard in the Thurgau itself when the most unbelievable tricks in the sphere of debt policies were applied to prevent relegation in the Valais or at Lake Geneva.'

c. Die Auf- und Absteigenden erzeugen ungewollt einen Ton, *der bewusst nicht als lästig zu eliminieren versucht wird*, sondern zum Eigenklang des Hauses gehören soll, so wünschen es sich die Architekten.[12]

'The people who go up and down produce a tune without intention which is not consciously sought to be eliminated but which, rather, belongs to the individual sound of the building, as the architects intended.'

Höhle's examples, other examples from the literature involved the verb *versuchen* 'to try', but Wurmbrand (2003b) showed that other verbs allow for the remote passive as well. (94) shows some of her examples with *beginnen* 'to start', *vergessen* 'to forget', and *wagen* 'to dare':

(94) a. *der zweite Entwurf* wurde zu bauen begonnen,[13]
the.NOM second plan was to build started
'It was begun to build the second plan.'

While the case of *der zweite Entwurf* 'the second plan' is unambiguously nominative, this is not the case for the examples in (95), since the respective elements

[10] Mannheimer Morgen, 26.09.1989, Feuilleton; Ist's gut, so unter sich zu bleiben?
[11] St. Galler Tagblatt, 09.02.1999, Ressort: TB-RSP; HCT und das Prinzip Hoffnung.
[12] Züricher Tagesanzeiger, 01.11.1997, p. 61.
[13] http://www.waclawek.com/projekte/john/johnlang.html, 28.07.2003.

are in the plural and hence could be nominative or accusative. But due to agreement with the finite verb, it is clear that the relative pronoun are in the nominative.

(95) a. Anordnungen, die zu stornieren vergessen *wurden*[14]
b. Aufträge [...], die zu drucken vergessen worden *sind*[15]
c. NUR Leere, oder doch noch Hoffnung, weil aus Nichts wieder Gefühle entstehen, die so vorher nicht mal zu träumen gewagt *wurden*?[16]
d. Dem Voodoozauber einer Verwünschung oder die gefaßte Entscheidung zu einer Trennung, die bis dato noch nicht auszusprechen gewagt *wurden*[17]

The object of a verb that is embedded under a passive participle is promoted to subject of the sentence:

(96) a. weil Aicke den Wagen oft zu reparieren versucht hat
because Aicke the.ACC car often to repair tried has
(German)
b. weil der Wagen oft *zu reparieren versucht wurde*
because the.NOM car often to repair tried was
'because many attempts were made to repair the car'

The remote passive is possible in verbal complexes only. If no verbal complex is formed as in (97a,c), the object of *reparieren* has to appear in the accusative:

(97) a. weil oft versucht wurde, den Wagen zu reparieren.
because often tried was the.ACC car to repair
'because many attempts were made to repair the car.'
b. * weil oft versucht wurde, der Wagen zu reparieren.
because often tried was the.NOM car to repair
c. Den Wagen zu reparieren wurde oft versucht.
the.ACC car to repair was often tried
d. * Der Wagen zu reparieren wurde oft versucht.
the.NOM car to repair was often tried

[14] http://www.rlp-irma.de/Dateien/Jahresabschluss2002.pdf, 28.07.2003.
[15] http://www.iitslips.de/news.html, 28.07.2003.
[16] http://www.ultimaquest.de/weisheiten_kapitel1.htm, 28.07.2003.
[17] http://www.wedding-no9.de/adventskalender/advent23_shawn_colvin.html, 28.07.2003.

The difference between (96b) and (97a,c) are explained by an analysis that treats the remote passive as a passivization of a predicate complex, i.e., by an analysis that assigns the structure (98) to (96b).

(98) weil der Wagen oft [[zu reparieren versucht] wurde].
because the.NOM car often to repair tried was
'because many attempts were made to repair the car.'

In (97a,c) we do not have predicate complexes. The object of *zu reparieren* is part of the VP and therefore it gets accusative. The passives in (97a,c) are impersonal passives.

The verb *versuchen* 'to try' selects a subject, an infinitive with *zu* 'to' and the complements of the embedded verb.

(99) *versuch-* 'to try':
$\left[\textsc{arg-st}\ \left\langle \mathrm{NP}[str]_i \right\rangle \oplus \boxed{1} \oplus \left\langle \mathrm{V}\left[inf, \textsc{subj}\ \left\langle \mathrm{NP}[str]_i \right\rangle, \textsc{comps}\ \boxed{1} \right] \right\rangle \right]$

In our example, the embedded verb is *reparieren* and has one complement. (100) shows the ARG-ST value of *versuch-*. The first NP is the subject of *versuchen* and the second NP is the attracted object of *zu reparieren*.

(100) ARG-ST value of *versuch-* with embedding of a strictly transitive verb:
$\left\langle \mathrm{NP}[str]_i, \mathrm{NP}[str]_j, \mathrm{V}[inf] \right\rangle$

When the passive lexical rule applies to this verb stem and licenses the respective participle, the resulting lexical item for *versucht* 'tried' will have the following ARG-ST value:

(101) ARG-ST of participle *versucht* with embedding of strictly transitive verb:
$\left\langle \mathrm{NP}[str]_j, \mathrm{V}[inf] \right\rangle$

The first NP is mapped to SUBJ and V[*inf*] is mapped to COMPS. After combination with *zu reparieren*, we have a complex with NP[*str*]$_j$ in SUBJ and nothing in COMPS. *wurde* selects a verb or verbal complex with the verb form *ppp* and the arguments of the embedded verb. Hence, NP[*str*]$_j$ ends up as the first element of the ARG-ST list of *werden* where it gets nominative. Since *werden* is finite all ARG-ST elements are mapped to COMPS and have to be realized in the sentence. The analysis of the verbal complex in (98) is shown in Figure 7.5 on the next page.

The remote passive is also possible with object control verbs, that is, verbs taking a subject and an object and a verbal projection the subject of which is coreferential with the object. An example is *erlauben* 'to permit'. (102a) shows the verb in the active and without verbal complex formation. The object of *erlauben*

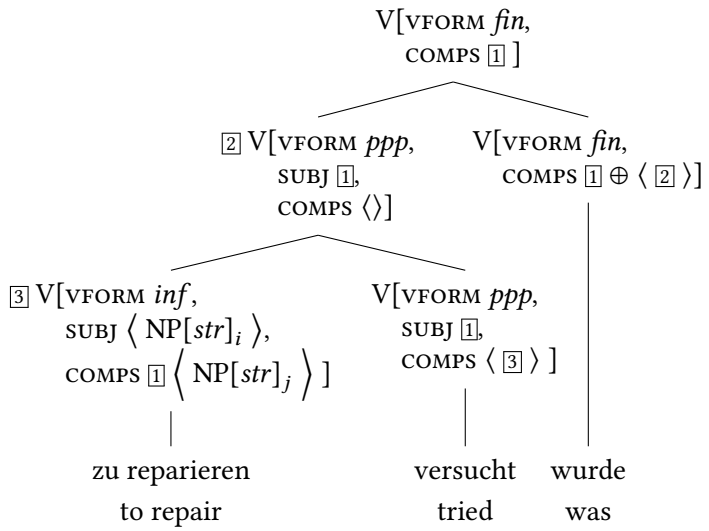

Figure 7.5: The analysis of the remote passive as passivization of a complex forming verb

'to permit' *uns* 'us' is coreferential with the subject of *den Erfolg auszukosten* 'to enjoy the success'. (102b,c) show that the object of *auszukosten* can be realized in the nominative, if the verbs are forming a verbal complex:

(102) a. Sie erlauben uns nicht, den Erfolg auszukosten.
they permitted us.DAT not the.ACC success to.enjoy
'They did not permit us to enjoy the success.'

b. Keine Zeitung wird ihr zu lesen erlaubt.[18]
no newspaper.NOM was her.DAT to read allowed
'She is not allowed to read any newspapers.'

c. Der Erfolg wurde uns nicht auszukosten erlaubt.[19]
the success.NOM was us.DAT not to.enjoy permitted
'We were not permitted to enjoy our success.'

The passive of the construction without verbal complex is an impersonal passive:

(103) Uns wurde erlaubt, den Erfolg auszukosten.
us.DAT was allowed the.ACC success to.enjoy

[18] Stefan Zweig. *Marie Antoinette*. Leipzig: Insel-Verlag. 1932, p. 515, quoted from Bech (1955: 309). That this is an instance of the remote passive was noted by Askedal (1988: 13).

[19] Haider (1986b: 110).

(104) shows the ARG-ST value of *erlaub-*: *erlauben* takes a subject and a dative object. The dativ object is coindexed with the subject of the embedded verb, that is, the two NPs have the same index, namely j.

(104) *erlaub-* 'to permit':
$\left[\textsc{arg-st}\ \left\langle \mathrm{NP}[str]_i, \mathrm{NP}[ldat]_j \right\rangle \oplus \boxed{1} \oplus \left\langle \mathrm{V}\left[inf, \textsc{subj}\ \left\langle \mathrm{NP}[str]_j \right\rangle, \textsc{comps}\ \boxed{1} \right] \right\rangle \right]$

The complements of the embedded verb ($\boxed{1}$) are taken over by the embedding verb. (105) shows the ARG-ST value of the respective highest verb:

(105) a. *zu lesen erlauben*: $\left\langle \mathrm{NP}[str]_i, \mathrm{NP}[ldat]_j, \mathrm{NP}[str]_k, \mathrm{V}[\textsc{comps}\ \langle\ \mathrm{NP}[str]_k\ \rangle] \right\rangle$
b. *zu lesen erlaubt wird*: $\left\langle \mathrm{NP}[ldat]_j, \mathrm{NP}[str]_k, \mathrm{V}[\textsc{comps}\ \langle\ \mathrm{NP}[str]_k\ \rangle] \right\rangle$

(105a) shows how the object of *lesen* is attracted so that the combined ARG-ST contains three NPs. (105b) shows the passive variant in which the subject of *erlauben* is suppressed. The result is a ARG-ST list starting with a dative NP, an NP with lexical case. Since the first NP with structural case gets nominative and agrees with the finite verb, the theory makes the right predictions even in situations as complex as the remote passive with object control verbs. The first NP with structural case is the subject in German.

7.3 Summary

Summing up, it can be said that this chapter provides a unified account of the passive in Danish, Englisch, German, and Icelandic. The lexical rule accounts both for the morphological and the analytical passives. The first element on the ARG-ST list is suppressed and a relational constraint *promote* promotes any NP with structural case. The languages differ in what cases they use and which cases are structural/lexical. Danish inserts expletives to allow for impersonal passives and fulfilling the need of a subject. This expletive insertion is done in the ARG-ST mapping when arguments are mapped from ARG-ST to the valence lists.

The SVO languages seem to require different items for the perfect/passive participles, but Haider's (1986a) passive analysis for German using just one participle form for bot perfect and passive can be maintained.

Comprehension questions

1. What tests do you know for subjecthood?
2. Do these tests work for all Germanic languages?
3. In which way is German different from Icelandic in terms of subjects?
4. What is structural case? What is lexical case?
5. What is an impersonal passive?
6. Does Icelandic have impersonal passives?

Exercises

1. Which NPs in (106) do have structural and which lexical case?

(106) a. Der Junge lacht.
the.NOM boy laughs

b. Mich friert.
I.ACC freeze
'I am cold.'

c. Er zerstört das Auto.
he.nom destroys the.ACC car
'He destroys the car.'

d. Das dauert ein ganzes Jahr.
this.NOM takes a.acc whole year
'This takes a whole year.'

e. Er hat nur einen Tag dafür gebraucht.
he.NOM has just one.ACC day there.for needed
'He needed a day for this.'

f. Er denkt an den morgigen Tag.
he.NOM thinks at the.ACC tomorrow day
'He thinks about tomorrow.'

2. Give ARG-ST lists for the following verbs:

(107) a. show, read, meet (English)
b. zeigen, begegnen, treffen (German)
c. (Danish)
d. (Icelandic)

If you are uncertain as far as case is concerned, you may use the Wiktionary[a].

3. Draw the analysis tree for the following sentence:

(108) that the box was opened

Please provide valence features (SPR and COMPS) and part of speech information. You may abbreviate the NP using a triangle.

[a] https://de.wiktionary.org/, 2018-07-02.

8 Clause types and expletives

Chapter 6 discussed the analysis of verb-initial and verb-second sentences. This chapter deals with embedded sentences with complementizers (e.g., *that* in English) and embedded interrogative sentences.

8.1 The phenomena

The phenomenon section consists of three parts: Section 8.1.1 deals with embedded clauses introduced by a complementizer, Section 8.1.2 describes the structure of interrogative clauses and Section 8.1.3 deals with expletives in V2 and interrogative clauses.

8.1.1 Embedded clauses introduced by a complementizer

As was already mentioned Afrikaans, Dutch, German are SOV languages and this is also shown in embedded clauses that are introduced by a complementizer. (1) is an example:

(1) Ich weiß, dass Aicke das Buch heute gelesen hat. (German)
I know that Aicke the book today read has
'I know that Aicke read the book today.'

English, beeing an SVO non-V2 language, allows for SVO order only.

(2) I know that Kim has read the book yesterday. (English)

Interestingly, Danish, also an SVO languauge, allows both SVO order (3) and V2 order (4) in clauses preceeded by a complementizer:

(3) Jeg ved, at Gert ikke har læst bogen i dag. (Danish)
I know that Gert not has read book.DEF today
'I know that Gert did not read the book today.'

(4) a. Jeg ved, at i dag har Gert ikke læst bogen. (Danish)
I know that today has Gert not read book.DEF

b. Jeg ved, at bogen har Gert ikke læst i dag.
I know that book.DEF has Gert not read today

The example in (3) includes the negation in order to show that we indeed deal with the SVO order here. Without the negation it is not clear whether non-V2 clauses are allowed in clauses that are introduced by a complementizer since (5a) has the finite verb in second position. With the negation present, it is clear that we have a V2 clause if the negation follows the finite verb as in (5b) and that we do not have a V2 clause if the finite verb follows the negation as in (3) and hence is in third position.

(5) a. at Gert har læst bogen (V2 or SVO)
that Gert has read book.DEF

b. at Gert har ikke læst bogen (V2)
that Gert has not read book.DEF

For complementizerless sentences the V2 order is the only one that is possible:

(6) a. Gert har ikke læst bogen (V2)
Gert has not read book.DEF

b. * Gert ikke har læst bogen (SVO)
Gert not has read book.DEF

Yiddish and Icelandic are SVO languages as well. The clauses that are combined with a complementizer are V2:

(7) a. Ikh meyn az haynt hot Max geleyent dos bukh.[1] (Yiddish)
I think that today has Max read the book
'I think that Max read the book today.'

b. Ikh meyn az dos bukh hot Max geleyent.
I think that the book has Max read

(8) Engum datt í hug, að vert væri að reyna til að (Icelandic)
no.one.DAT fell to mind that worth was to try PREP to
kynnast honum.[2]
know him
'It didn't occur to anyone that it was worth trying to get to know him.'

[1] Diesing (1990: 58)
[2] Maling (1990: 75)

8.1.2 Interrogative clauses

The OV languages form subordinated interrogative clauses by preposing a phrase containing an interrogative pronoun[3] from an otherwise SOV clause. (9) shows a German example:

(9) a. Ich weiß, wer heute das Buch gelesen hat. (German)
I know who today the book read has
'I know who read the book today.'

b. Ich weiß, was Aicke heute gelesen hat.
I know what Aicke today read has
'I know what Aicke has read today.'

Since languages like German allow for scrambling, senteces like those in (9) could just be due to the permutation of arguments of a head. However, the generalization about these *w*-clauses is that an arbitrary *w*-element can be fronted. (10) gives a German example involving a nonlocal dependency:

(10) Ich weiß nicht, [über welches Thema]$_i$ sie versprochen (German)
I know not about which topic she promised
hat, [[einen Vortrag $\__i$] zu halten].
has a talk to hold
'I do not know about which topic she promised to give a talk.'

Here, the phrase *über welches Thema* 'about which topic' is an argument of *Vortrag*, which is embedded in the VP containing *zu halten* 'to hold', which is in turn embedded under *versprochen hat* 'promised has'. The generalization about interrogative clauses is that an interrogative clause consists of a interrogative phrase (*über welches Thema* 'about which topic') and a clause in which this interrogative phrase is missing somewhere (*sie versprochen hat, einen Vortrag zu halten* 'she promised to give a talk').

In German the order of the other constituents is free as in assertive main clauses and embedded clauses with a complementizer that were discussed earlier.

(11) a. Ich weiß, was keiner diesem Eichhörnchen geben würde. (German)
I know what nobody this squirrel give would
'I know what nobody would give this man.'

[3] Most interrogative pronouns start with *w* in German and *wh* in English. Phrases containing an interrogative pronoun are called *w*-phrases or *wh*-phrases, respectively. Interrogative clauses are sometimes called *w*-clauses or *wh*-clauses.

b. Ich weiß, was diesem Eichhörnchen keiner geben würde.
I know what this squirrel nobody give would

This follows from that we said so far, since interrogatives are just SOV sentences with one constituent extracted. The possibility of scrambling constituents is not affected by extracting a phrase.

In Danish and English the interrogative clauses consist of an interrogative phrase and an SVO clause in which it is missing:

(12) a. Gert har givet ham bogen. (Danish)
Gert has given him book.DEF
'Gert gave him the book.'

b. Jeg ved, hvad$_i$ [Gert har givet ham $\__i$].
I know what Gert has given him
'I know what Gert gave him.'

c. Jeg ved, hvem$_i$ [Gert har givet $\__i$ bogen].
I know who Gert has given book.DEF
'I know who Gert has given the book.'

(12a) shows the clause with SVO order and (12b) is an example with the secondary object as interrogative ponoun and (12c) is an example with the primary object as interrogative pronoun. The position that the respective objects have in non-interrogative clauses like (12a) is marked with $\__i$.

Yiddish is special in that it has a V2 order in interrogative clauses as well (Diesing 1990: Sections 4.1, 4.2): interrogatives consist of a interrogative phrase that is extracted from a V2 clause:

(13) Ir veyst efsher [avu do voynt Roznblat der goldshmid]?[4]
you know maybe where there lives Roznblat the goldsmith
'Do you perhaps know where Roznblat the goldsmith lives?'

So the variation is *w*-phrase + SOV, *w*-phrase + SVO, and *w*-phrase + V2.

In addition to the question regarding the order within the embedded clause (SOV, SVO, V2), there is variation in finiteness of the embedded clause:

(14) a. I wonder what to read.

b. I wonder what I should read.

c. * Ich frage mich, was zu lesen. (German)
I ask myself what to read

[4] Diesing (1990: 65). Quoted from Olsvanger, *Royte Pomerantsn*, 1949.

d. Ich frage mich, was ich lesen soll / kann. (German)
I ask myself what I read shall can
'I wonder what I shall/can read.' or 'I wonder what to read.'

English allows for infinitives with *to*. In comparison to finite interrogative clauses the infinitival form adds a modal meaning. German does not allow for non-finite interrogatives as (14c) shows.

8.1.3 The use of expletives to mark the clause type

The Germanic languages use constituent order to code the clause type: V2 main clauses can be assertions or questions, depending on the content of the preverbal material and intonation. Similarly embedded interrogative clauses consist of a *w*-phrase and an SVO, SOV, or V2 clause. The fronting of a constituent in a V2 clause comes with certain information structural effects: something is the topic or the focus of an utterance. For embedded sentences it is important for some languages that the structure is transparent that is, that we have the *w* + SVO or *w* + V2 order. There are situations in which it is inappropriate to front an element and in such situations the Germanic languages use expletives, that is, pronouns that do not contribute semantically, to maintain a certain order.

German uses the expletive *es* to fill the position in front of the finite verb, if no other constituent is to be fronted.

(15) a. Drei Reiter ritten zum Tor hinaus. (German)
three riders rode to.the gate out
'Three riders rode out of the gate.'

b. Es ritten drei Reiter zum Tor hinaus.
EXPL rode three riders to.the gate out

Danish uses the expletive to make it clear that an extraction of a consituent took place (Müller & Ørsnes 2011: 169):[5]

(16) a. Politiet ved ikke, hvem der havde placeret (Danish)
police.DEF knows not who EXPL has placed
bomben.[6]
bomb.DEF

'The police does not know who placed the bomb.'

[5] Examples marked with DK are extracted from KorpusDK, a corpus of 56 Million words documenting contemporary Danish (http://ordnet.dk/korpusdk).

[6] DK

b. * Politiet ved ikke, hvem havde placeret bomben.
police.DEF knows not who has placed bomb.DEF

Without the expletive one would have a pattern like the one in (16b). In (16b) we have the normal SVO order and it is not obvious to the hearer that the pattern consists of an extracted element (the subject) and an SVO clause from which it is missing. This is more transparent if an expletive is inserted into the subject position as in (16a). (17) shows this using the analysis that will be suggested in Section 8.2.3: (17a) shows the hypothetical structure that would result if one assumed that the subject *hvem* 'who' is extracted. So-called *string-vacuous movement* would result: the subject is moved to a place right next to it. In (17b) on the other hand the subject position is taken by the expletive and hence it is clear that the embedded sentence has a special structure. There is an overt marker for the hearer or reader of the sentence marking it as an embedded interrogative clause.

(17) a. * [hvem$_i$ [$_{-i}$ havde placeret bomben]] (Danish)
who has placed bomb.DEF

b. [hvem$_i$ [der havde $_{-i}$ placeret bomben]]
who EXPL has placed bomb.DEF

Similarly Yiddish uses an expletive in embedded interrogatives (*w* + V2) if there is no other element that is information structurally appropriate for the preverbal position. (18) shows examples from Prince (1989: 403–404):

(18) a. ikh hob zi gefregt ver es iz beser far ir (Yiddish)
I have her asked who EXPL is better for her
'I have asked her who is better for her.'

b. ikh hob im gefregt vemen es kenen ale dayne khaverim
I have him asked whom EXPL know all your friends
'I asked him whom all your friends know.'

(18a) is an example involving an interrogative pronoun that is the subject and (18b) is an example in which the preverbal position is not filled by an argument of *kenen* 'know' but by an expletive. The subject *ale dayne khaverim* 'all your friends' stays behind and the object *vemen* 'whom' is extracted since it is the interrogative pronoun.

8.2 The analysis

8.2.1 Embedded clauses introduced by a complementizer

The analysis of Afrikaans, Dutch, German and English complementizer phrases is straightforward: the complementizer is combined with an uninverted verbal projection. For the first languages this is a verb last clause (SOV) and for English it is an SVO clause. The respective analyses are given in Figure 8.1 and 8.2.

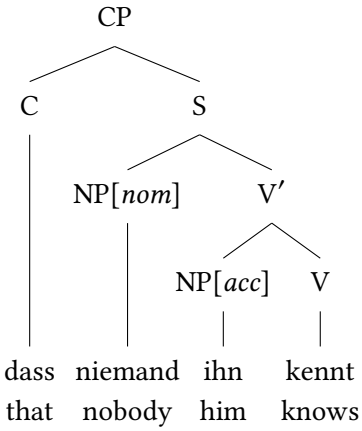

Figure 8.1: Analysis of German complementizer phrase as C + VL

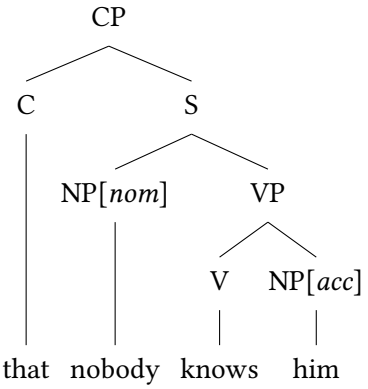

Figure 8.2: Analysis of English complementizer phrase as C + SVO

Yiddish complementizers select for a V2 clause. The analysis of the example

in (19) is shown in Figure 8.3.

(19) Ikh meyn az haynt hot Max geleyent dos bukh.[7] (Yiddish)
I think that today has Max read the book
'I think that Max read the book today.'

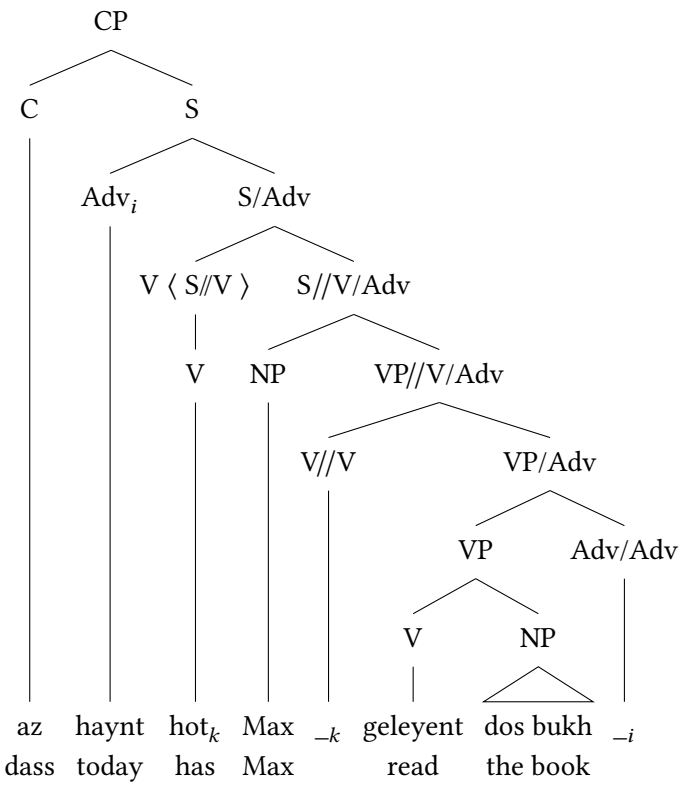

Figure 8.3: Analysis of the Yiddish complementizer phrase as C + V2

The analysis looks complicated but it is really just the combination of a complementizer with a V2 clause. The V2 clause has *haynt* 'today' extracted and the finite auxiliary *hot* 'has' is moved to V1 position.

The differences between languages can be accounted for by letting the complementizer select Ses with different feature–value combinations. While complementizers in SOV languages select for verb-final projections (INITIAL–), Yiddish selects for V2+ sentences (the result of applying the Filler-Head Schema) and

[7] Diesing (1990: 58)

Danish does not specify any of such features on the selected clause. Since nothing is specified in Danish, the embedded clause can have the form that the rest of the Danish grammar permits: it can be SVO or V2.

8.2.2 Interrogative clauses

As the data discussion showed, the phrase containing the interrogative pronoun is extracted from the remaining clause. The fronting of the *w*-phrase is like fronting in V2 sentences. In the topological fields model, the fronted phrase in German relative clauses and interrogative clauses is assigned to the *Vorfeld* (Müller 2020: 47–49). The difference between interrogative clauses and V2 clauses is the position of the verb: V2 sentences have the verb in initial position while it is in final position in interrogatives and relatives. Figure 8.4 shows the analysis of the interrogative clause in (20). The pronominal adverb *worüber* 'about what' is extracted from the rest of the clause.

(20) Ich weiß, [worüber]$_i$ [$_{-i}$ sie spricht].
I know where.about she speaks
'I know what she speaks about.'

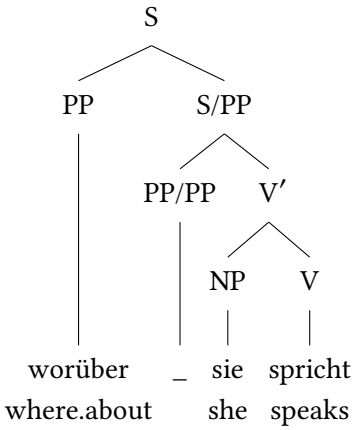

Figure 8.4: Analysis of simple interrogative clause

Figure 8.4 uses the slash notation that I have been using so far. In order to account for more complex *w*-phrases I will use the same trick as for other nonlocal dependencies and pass information about *w*-pronouns on to mother nodes. For modeling this I will use list-valued features like SPR and COMPS. Figure 8.5 shows

the same sentence as Figure 8.4 but with two features that are traditionally used in the analysis of nonlocal dependencies (Pollard & Sag 1994: Chapter 4 and 5): QUE and SLASH. By convention, the boxed numbers are put in front of XPs if the XP is an argument and they follow the XP if the XP is involved in a nonlocal dependency. The reason for this is that different parts of information are shared. A full explanation of the difference requires some deeper understanding of the mechanisms and cannot be given here. The interested reader is referred to Müller (2013b: Chapter 10) or to Borsley & Crysmann (2021). PP[1][SLASH ⟨ [1] ⟩] means that the relevant information about the PP is put into SLASH, that is, into the list that is percolated upwards until a matching filler is found (a PP whose relevant properties can be identified with the element in the SLASH list). Once a filler has been found no SLASH element is passed upwards. The SLASH list of the top-most node is the empty list.

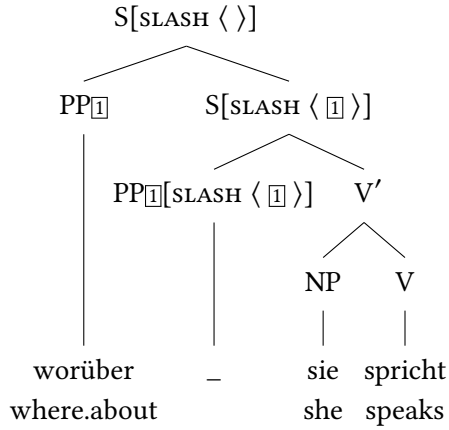

Figure 8.5: Analysis of simple interrogative clause using the SLASH feature

Now, this machinery can be extended to cover nonlocal dependencies for interrogative pronouns. Figure 8.6 shows how the information about the interrogative within the complex *w*-phrase can be passed upwards in a tree by using the QUE feature.

(21) Ich weiß, [über welches Thema]$_i$ [$_{-i}$ sie spricht].
I know about which topic she speaks
'I know which topic she speaks about.'

Figure 8.6 is completely parallel to Figure 8.4 except that information about the *w*-word is added. The content of QUE is not provided here but the QUE list of *w*-

words contains information that is needed for semantics: the *w*-word indicates what is asked for and this information is passed up to the level of the complete clause (see Ginzburg & Sag 2000 on interrogatives in general and on their semantics in particular).

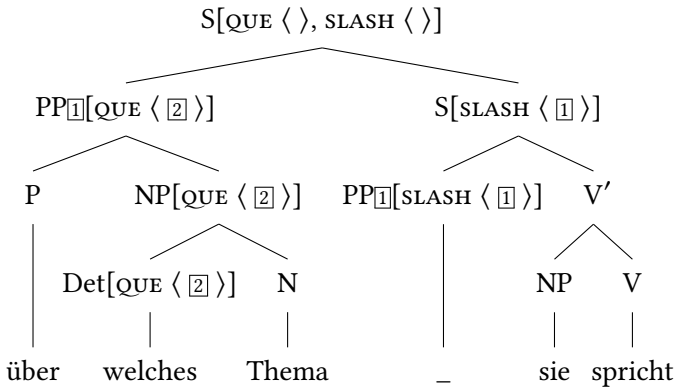

Figure 8.6: Analysis of simple interrogative clause using SLASH and QUE

Interrogative clauses are licensed by a special variant of the Filler-Head Schema, namely a schema that requires the initial daughter (the filler) to have something in its QUE list (Figure 8.7). This entails that the filler has to contain a *w*-word.

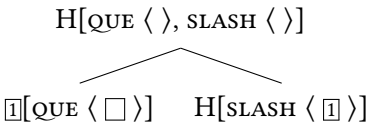

Figure 8.7: Interrogative Clause Schema

The languages differ as far as the order of the verb and its arguments are concerned, so further specifications have to be added to what is given in Figure 8.7. For example, German interrogative clauses are verb final, while Yiddish interrogatives involve an extraction out of a V2 clause. In addition, constraints regarding the verb form have to be specified. German allows for finite verbs only, while English allows for finite verbs and infinitives with *to* (see (14) on p. 176).

Up to now, we have looked at German examples with prepositional objects fronted. Figure 8.8 shows the analysis of (22) with a subject as a *w*-phrase:

(22) wer das Buch liest (German)
who the books reads
'who reads the book'

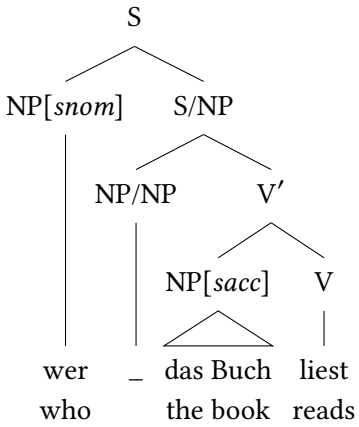

Figure 8.8: Analysis of German interrogative clause with the subject as *w*-word

So, with what we have so far, we can analyze interrogatives in German and other SOV languages but there are still open questions in languages like Danish where expletive insertion in subject position is required when a subject is questioned (see (16)). Similarly, Yiddish may insert expletives in the preverbal position in interrogatives (see (18)). So, to account for this data, we have to deal with expletives. Expletives are the topic of the next section.

8.2.3 A lexical rule for the introduction of expletives

The various types of expletives introduced in Section 8.1.3 can – maybe somewhat surprisingly – be accounted for by a simple lexical rule that adds an expletive to the ARG-ST list of lexical items (Müller & Ørsnes 2011: 180):

(23) Expletive Insertion Lexical Rule:

$$\left[\begin{array}{ll} \textsc{head} & \left[\begin{array}{l} \textit{verb} \\ \textsc{vform}\ \textit{fin} \end{array}\right] \\ \textsc{arg-st} & \boxed{1} \end{array}\right] \mapsto \left[\textsc{arg-st}\ \left\langle \textsc{np}[\textit{lnom}]_{\textit{expl}} \right\rangle \oplus \boxed{1}\right]$$

The application of the lexical rule is restricted to finite verbs since positional expletives occur in V2 sentences and these are always finite. Expletives in inter-

rogative clauses are used to fill the subject position to mark extraction and of course this is something that is necessary in finite clauses only.

The case of the expletive pronoun is specified as lexical nominative, which means that it is invisible to case assignment principles. Nominative is assigned to the first NP with structural case (see p. 148) and since the expletive has lexical case, nothing changes. The same is true for structural accusatives: the first NP with structural gets nominative and all others accusative. The expletive does not interfere with this.

Similarly, the theory of agreement entertained so far is not affected: the verb agrees with the first NP with structural case. This makes the right predictions for agreement in Icelandic, where the verb agrees with objects in the nominative (Zaenen et al. 1985: 460).

(24) a. Hefur henni alltaf þótt Ólafur leibinlegur?[8] (Icelandic)
has she.DAT always thought Olaf.NOM boring.NOM
'Has she always considered Olaf boring?'

b. Konunginum voru gefnar ambáttir.[9]
the.king.DAT were given.F.PL maidservants.NOM.F.PL
'The king was given female slaves.'

And the approach to agreement also works for cases of remote passive in German, where the subject is not the first element in an ARG-ST list. One of the examples in (102) on p. 167 is repreated below:

(25) a. Sie erlauben uns nicht, den Erfolg auszukosten.
they permitted us.DAT not the.ACC success to.enjoy
'They did not permit us to enjoy the success.'

b. Der Erfolg wurde uns nicht auszukosten erlaubt.[10]
the success.NOM was us.DAT not to.enjoy permitted
'We were not permitted to enjoy our success.'

See p. 168 for the respective ARG-ST lists.

As far as the position in the clause is concerned, the expletive is a subject in Danish. This is exactly what we want and what follows from the general mapping from ARG-ST to SPR and COMPS in SVO languages. The analysis of (26) is shown in Figure 8.9.

[8] Zaenen, Maling & Thráinsson (1985: 451)
[9] Zaenen, Maling & Thráinsson (1985: 460)
[10] Haider (1986b: 110)

(26) hvem det læser bogen
who EXPL reads book.DEF
'who reads the book'

The lexical item for *læser* 'to read' is given in (27):

(27) Lexical item for *læser* 'to read' with expletive subject:

$$\begin{bmatrix} \textsc{spr} & \left\langle \text{NP}[\mathit{lnom}]_{\mathit{expl}} \right\rangle \\ \textsc{comps} & \langle \text{NP}[\mathit{str}], \text{NP}[\mathit{str}] \rangle \\ \textsc{arg-st} & \left\langle \text{NP}[\mathit{lnom}]_{\mathit{expl}}, \text{NP}[\mathit{str}], \text{NP}[\mathit{str}] \right\rangle \end{bmatrix}$$

The case assignment principles assign nominative to the first NP with structural case and accusative to the second. As Figure 8.9 shows, the expletive subject is realized as specifier in the subject position and the nominative and accusative on the COMPS list are realized as objects. The "nominative object" is extracted and realized as the interrogative pronoun.

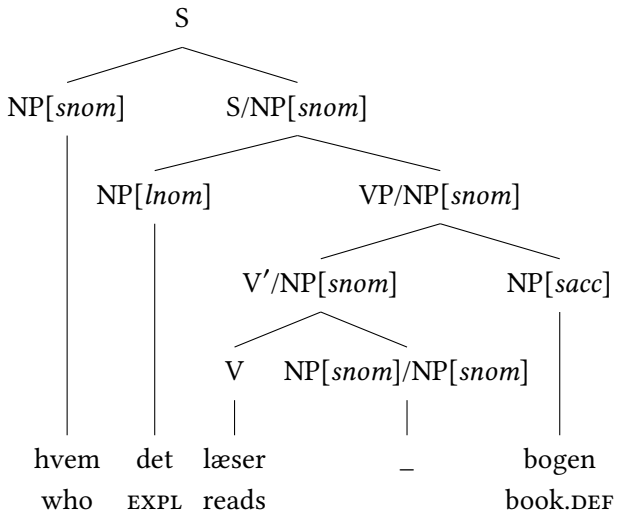

Figure 8.9: Analysis of interrogative clauses in Danish with subject extraction

Similarly, the analysis of interrogatives in Yiddish may involve an initial expletive in the V2 clause if the speaker finds the subject or any other element inappropriate for this position for information structural reasons. Figure 8.10 shows the analysis of (28):

(28) ver es leyent dos bukh (Yiddish)
who EXPL reads the book
'who reads the book'

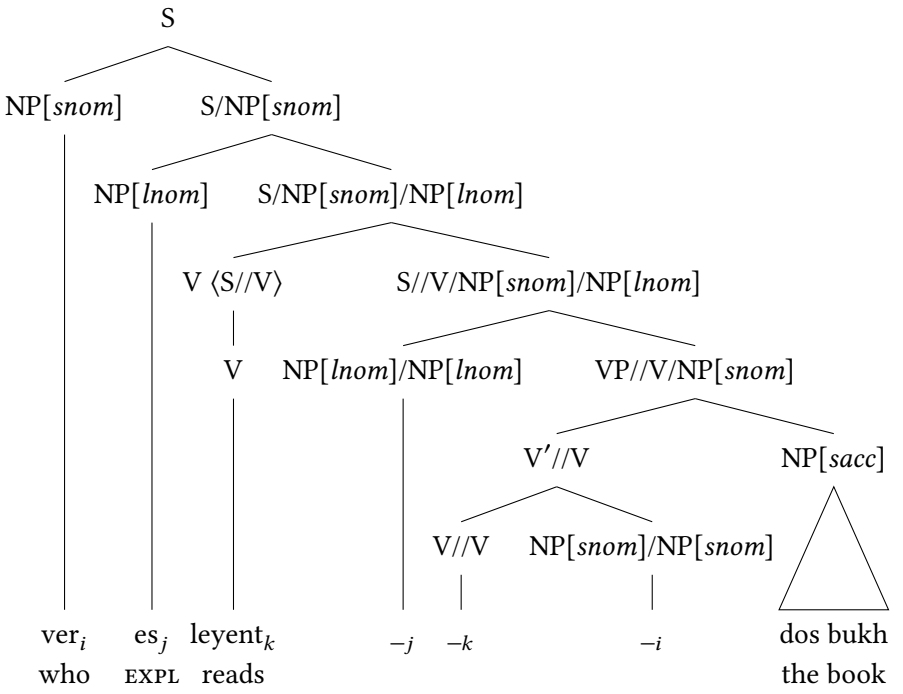

Figure 8.10: Analysis of a Yiddish interrogative clause involving a fronted expletive pronoun

The analysis is more complex than the Danish one, but this is due to the fact that Yiddish has V2 sentences in interrogatives involving verb movement in addition to extraction. Interrogatives have two extracted elements: one for V2, the expletive in the example, and another one which is the interrogative phrase (*ver* 'who' in the example). The figure shows two elements after a /. In the notation using the SLASH feature, there would be a list with two elements.

This completes the analysis of finite interrogative clauses with and without expletives, but there is more to be said about expletives in general. I stipulated a lexical rule adding an expletive element above and this accounts for expletives in Yiddish interrogatives. It not just works for interrogatives but for V2 in general. Yiddish declarative V2 clauses can have initial expletives as well, as can German

V2 clauses. (29a) is a German example. As (29b) shows, the expletive is not allowed to appear in the *Mittelfeld*.

(29) a. Es lachen drei Kinder.
EXPL laugh three children
'Three children laugh.'

b. * dass es drei Kinder lachen
that EXPL three children laugh

In German grammars, this expletive is called "positional *es*" and it is emphasized that it is not the subject and not an argument of the verb (Eisenberg 2004: 129, 177, 371; Duden 2005: §1263). The fact that the *es* cannot appear in the *Mittelfeld* is seen as support for the non-argumenthood of it. However, we have seen that the expletive is realized in the subject position in Danish, so there is some appeal to the idea to treat it uniformly as the initial element of the ARG-ST list across the Germanic languages. Nevertheless it is undeniable that the *Vorfeld* is the only place in which this expletive can appear in German and Yiddish.The problem can be solved by adding the following constraint to the Expletive Insertion Lexical Rule in the grammars of German and Yiddish:

(30) Constraint on the output of the Expletive Insertion Lexical Rule for German and Yiddish:
$\left[\text{ARG-ST}\ \left\langle\ \text{NP}\boxed{1}[\text{SLASH}\ \langle\ \boxed{1}\ \rangle]\ \right\rangle \oplus \square\right]$

This constraint says that the first element in the ARG-ST list (the expletive) has to have a SLASH element with the relevant properties of the expletive. Since the expletive pronoun does not have anything in SLASH, it cannot be combined directly with the respective lexical items. The trace has something in SLASH, this is its very nature. So a trace can combine with the lexical item for *lachen* 'to laugh' and then the expletive can function as the filler.

One problem remains: extraction of expletives must be clause-bound:

(31) * Es_i glaube ich, dass $\__i$ drei Kinder lachen. (German)
EXPL believe I that three children laugh
Intended: 'I believe that three children laugh.'

While extraction may cross clause boundaries in principle (see (10) on p. 175), this is excluded in (31). However, this is not a particular problem of the analysis of the positional *es* at hand but it is a general property of expletive elements. (32) shows an example with the weather *es*, which clearly is an argument of the verb *regnen* 'to rain':

(32) * Es$_i$ glaube ich, dass $\__i$ regnet.
EXPL believe I that rains
Intended: 'I believe that it rains.'

So, whatever rules out examples like (32) also accounts for (31).

Finally, there is one problem left: I provided a lexical rule that licenses lexical item for interrogatives with an expletive in subject position, but what is still missing is a constraint that rules out sentences without the expletive. There is nothing in the grammar so far that does this. It is possible to formulate something like this but the formal tools have not been introduced in this book. The reader is refered to Müller & Ørsnes (2011: 185) for details.

8.3 Summary

This chapter provided an analysis of dependent clauses introduced by a complementizer and of interrogative clauses. Together with the V1 and V2 clauses dealt with in Chapter 6 this covers the main clause types in the Germanic languages. The variation in these subordinated clauses is connected to what we saw before: the SOV languages have SOV order in embedded languages and some SVO languages have SVO order, some allow for both SVO and V2 and some allow for V2 only. Interrogative clauses involve a clause with a gap and the filler is the interrogative phrase containing a *wh*-word in English and a corresponding word in the other Germanic languages. The *wh* phrase may consist of a single interrogative pronoun or may be internally complex. The information about the interrogative pronoun has to be present at the top-most node of the interrogative phrase for semantic and syntactic reasons. The syntactic reason is of course that one has to make sure that the fronted phrase contains an interrogative pronoun at all. The information is passed up from the interrogative pronoun by the same mechanism that is also used for extraction: like SLASH, QUE is used to pass the information up. Danish and Yiddish use expletive pronouns in interrogatives. To account for this, Müller & Ørsnes (2011) suggested a lexical rule that introduced the expletive into the ARG-ST list. This expletive can function as subject in Danish and as positional expletive in German and Yiddish.

9 Outlook

This book sketched fragments of grammars of several Germanic languages. The theory lurking in the background is Head-Driven Phrase Structure Grammar (HPSG) (Pollard & Sag 1987; 1994; Müller 2013b; Müller et al. 2021). We had a look at valence and how it is represented in valence lists like SPR and COMPS. We also looked at adjuncts, which are not represented in lists: adjuncts select the heads they modify. HPSG assumes that there are schemata for the combinaiton of linguistic material. We dealt with the Specifier-Head Schema, the Head-Complements Schema, the Head-Adjunct Schema and also the Predicate Complex Schema. Verbal complexes in the Germanic OV languages have been analyzed as predicate complex formation.

The Germanic languages vary as far as their basic order is concerned (VO or OV). Apart from English all Germanic languages are V2 languages. V2 sentences are analyzed via head movement: there is an empty verb in final position which is related to the fronted verb.

All analyses are implemented in computer-processable grammar fragments. They are fully formalized – otherwise they would not be processable – but they have been given here in simplified and sketchy form. I briefly talked about the connection between syntax and semantics in Section 4.8, but of course all implementations come with semantic representations.

Due to space limitations, it is not possible to carefully introduce all concepts of HPSG, but the interested reader is invited to have a look at the HPSG monographs (Pollard & Sag 1987; 1994; Ginzburg & Sag 2000; Müller 2013b), overview articles (Levine & Meurers 2006; Przepiórkowski & Kupść 2006; Bildhauer 2014; Müller 2015a; Müller & Machicao y Priemer 2019), the respective chapter in the Grammatical Theory textbook (Müller 2020: Chapter 9) or the handbook on HPSG (Müller et al. 2021). Especially the latter volume is an uptodate book with more than 1600 pages dealing in 32 chapters with almost every aspect one could be interested in.

Appendix A: Solutions

A.1 Phrase structure grammars and $\overline{X}$ theory

1. Draw trees for the following phrases. You may use the symbol NP for proper names and $\overline{N}$ for nouns not requiring complements (as in Figure 3.11)

(1) a. eine Stunde vor der Ankunft des Zuges
one hour before the arrival of.the train
'one hour before the arrival of the train'

b. kurz nach der Ankunft in Paris
shortly after the arrival in Paris
'shortly after the arrival in Paris'

c. das ein Lied singende Kind aus dem Allgäu
this a song singing child from the Allgäu
'the child from the Allgäu singing a song'

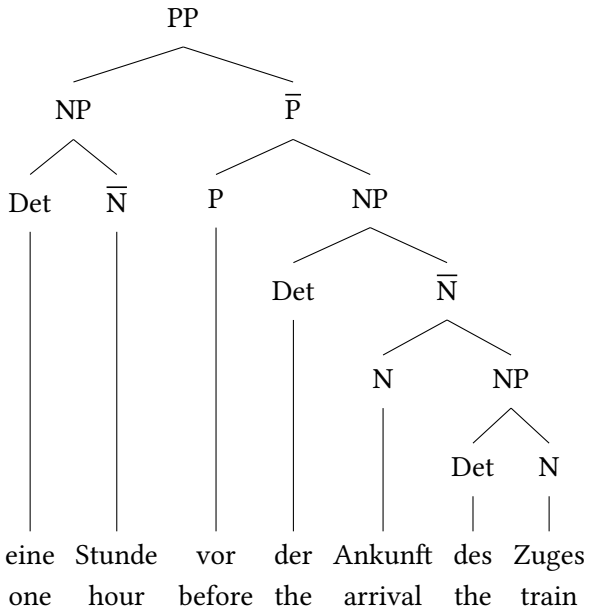

Figure A.1: Analysis of *eine Stunde vor der Ankunft des Zuges* 'one hour before the arrival of the train'

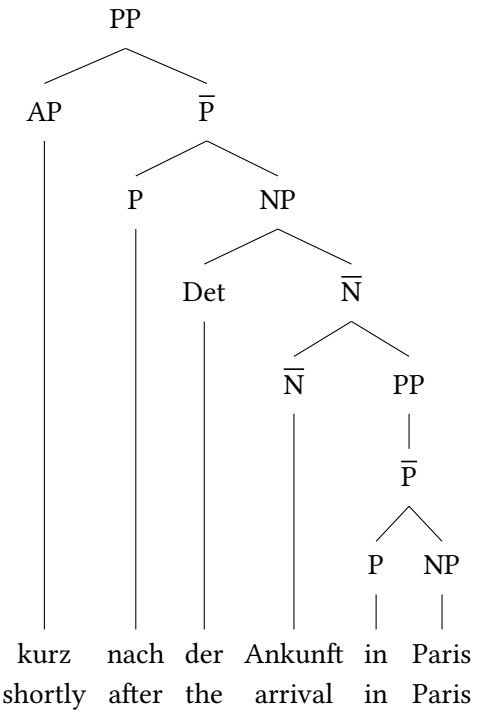

Figure A.2: Analysis of *kurz nach der Ankunft in Paris* 'shortly after the arrival in Paris'

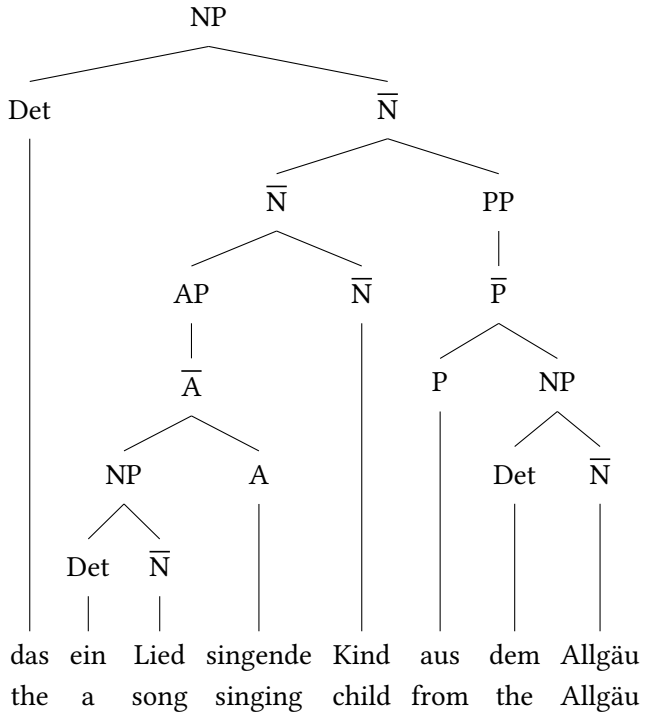

Figure A.3: Analysis of *das ein Lied singende Kind aus dem Allgäu* 'the child from the Allgäu singing a song'

A.2 Valency, argument order and adjunct placement

1. Provide the valency lists for the following words:

   (2) a. laugh — SPR ⟨ NP[*nom*] ⟩
   b. eat — SPR ⟨ NP[*nom*] ⟩, COMPS ⟨ NP[*acc*] ⟩
   c. to douse — SPR ⟨ NP[*nom*] ⟩, COMPS ⟨ NP[*acc*] ⟩
   d. bezichtigen (accuse) — SPR ⟨⟩, COMPS ⟨ NP[*nom*], NP[*gen*] ⟩ (German)
   e. he — SPR ⟨⟩, COMPS ⟨⟩
   f. the — SPR ⟨⟩, COMPS ⟨⟩
   g. Ankunft (arrival) — SPR ⟨ DET ⟩, COMPS ⟨ NP ⟩ / SPR ⟨ DET ⟩, COMPS ⟨⟩ (German)

   If you are uncertain as far as case assignment is concerned, you may use the Wiktionary[1].

2. Draw trees for the NPs that were also used in exercise 1 on page 60 in Chapter 3.

   (3) a. eine Stunde vor der Ankunft des Zuges
   one hour before the arrival of.the train
   'one hour before the arrival of the train'
   b. kurz nach der Ankunft in Paris
   shortly after the arrival in Paris
   'shortly after the arrival in Paris'
   c. das ein Lied singende Kind aus dem Allgäu
   this a song singing child from the Allgäu
   'the child from the Allgäu singing a song'

3. Draw trees for the following examples. NPs can be abbreviated.

   (4) a. weil Aicke dem Kind ein Buch schenkt (German)
   because Aicke the.DAT child a.ACC book gives.as.a.present
   'because Aicke gives the child a book as a present'

[1] https://de.wiktionary.org/, 2018-07-02.

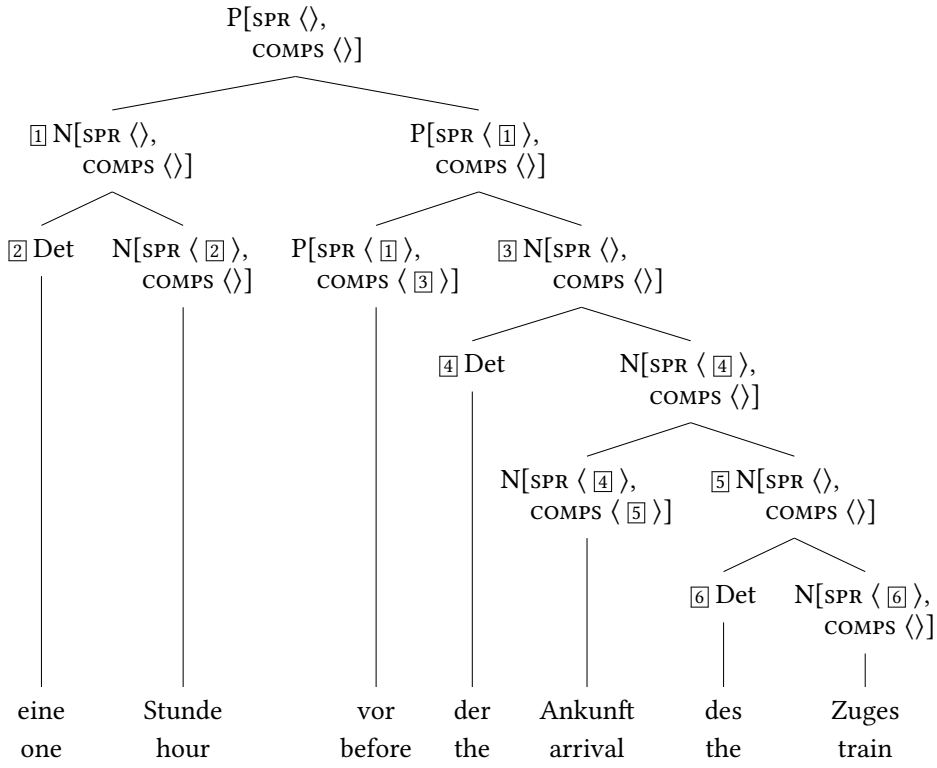
P[SPR ⟨⟩, COMPS ⟨⟩]
1 N[SPR ⟨⟩, COMPS ⟨⟩]
P[SPR ⟨ 1 ⟩, COMPS ⟨⟩]
2 Det
N[SPR ⟨ 2 ⟩, COMPS ⟨⟩]
P[SPR ⟨ 1 ⟩, COMPS ⟨ 3 ⟩]
3 N[SPR ⟨⟩, COMPS ⟨⟩]
4 Det
N[SPR ⟨ 4 ⟩, COMPS ⟨⟩]
N[SPR ⟨ 4 ⟩, COMPS ⟨ 5 ⟩]
5 N[SPR ⟨⟩, COMPS ⟨⟩]
6 Det
N[SPR ⟨ 6 ⟩, COMPS ⟨⟩]
eine Stunde vor der Ankunft des Zuges
one hour before the arrival the train

Figure A.4: Analysis of *eine Stunde vor der Ankunft des Zuges* 'one hour before the arrival of the train'

b. weil dem Kind solch ein Buch niemand
because the.DAT child such a.ACC book nobody.NOM
schenkt
gives.as.a.present
'because nobody gives the child such a book as a present'

c. because Kim gave a book to him

d. Sandy saw this yesterday.

e. at Bjarne læste bogen (Danish)
that Bjarne read book.DEF
'that Bjarne read the book'

The trees with the solutions are given in the following. Figure A.8 differs

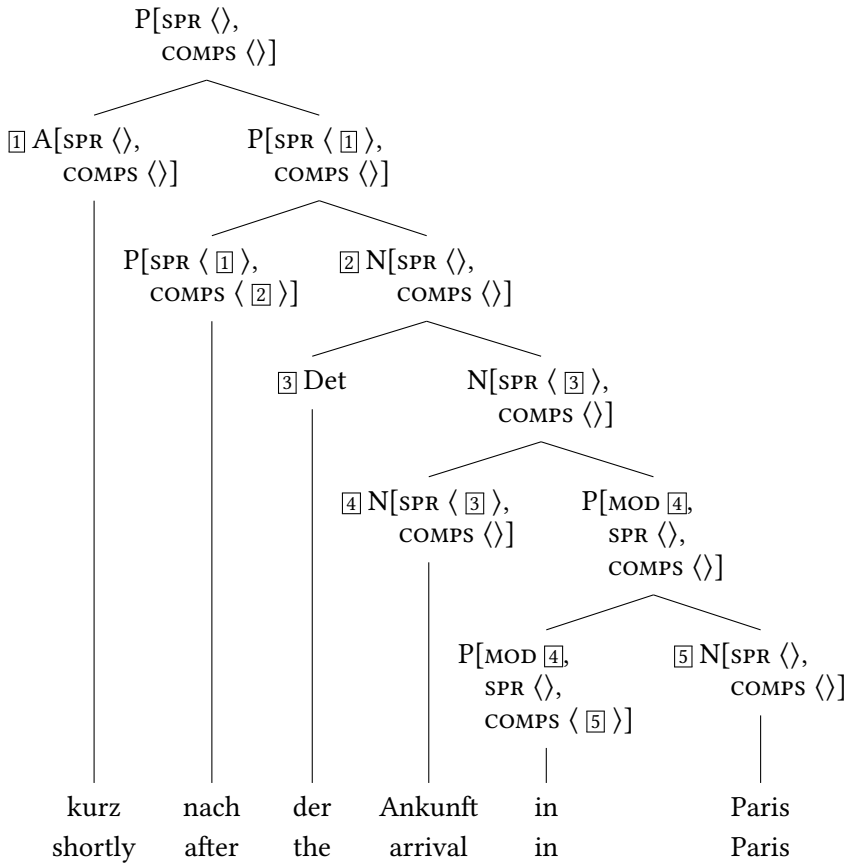
P[SPR ⟨⟩, COMPS ⟨⟩]
1 A[SPR ⟨⟩, COMPS ⟨⟩]
P[SPR ⟨ 1 ⟩, COMPS ⟨⟩]
P[SPR ⟨ 1 ⟩, COMPS ⟨ 2 ⟩]
2 N[SPR ⟨⟩, COMPS ⟨⟩]
3 Det
N[SPR ⟨ 3 ⟩, COMPS ⟨⟩]
4 N[SPR ⟨ 3 ⟩, COMPS ⟨⟩]
P[MOD 4, SPR ⟨⟩, COMPS ⟨⟩]
P[MOD 4, SPR ⟨⟩, COMPS ⟨ 5 ⟩]
5 N[SPR ⟨⟩, COMPS ⟨⟩]
kurz shortly
nach after
der the
Ankunft arrival
in in
Paris Paris

Figure A.5: Analysis of *kurz nach der Ankunft in Paris* 'shortly after the arrival in Paris'

from Figure A.7 in the way the elements in the COMPS list are numbered, but in each case the order of the elements in the COMPS list of *schenkt* 'gives as a present' is ⟨ NP[*nom*], NP[*dat*], NP[*acc*]⟩. The different numbering is due to the order in which the elements are combined. If the numbering is done consistently from top to bottom, Figure A.8 is the result. If one is more liberal in the way the numbers are assigned, the same situation can be depicted as in Figure A.9. Figure A.9 has the same numbering in the valence list a Figure A.7 and maybe easier to grasp because of this.

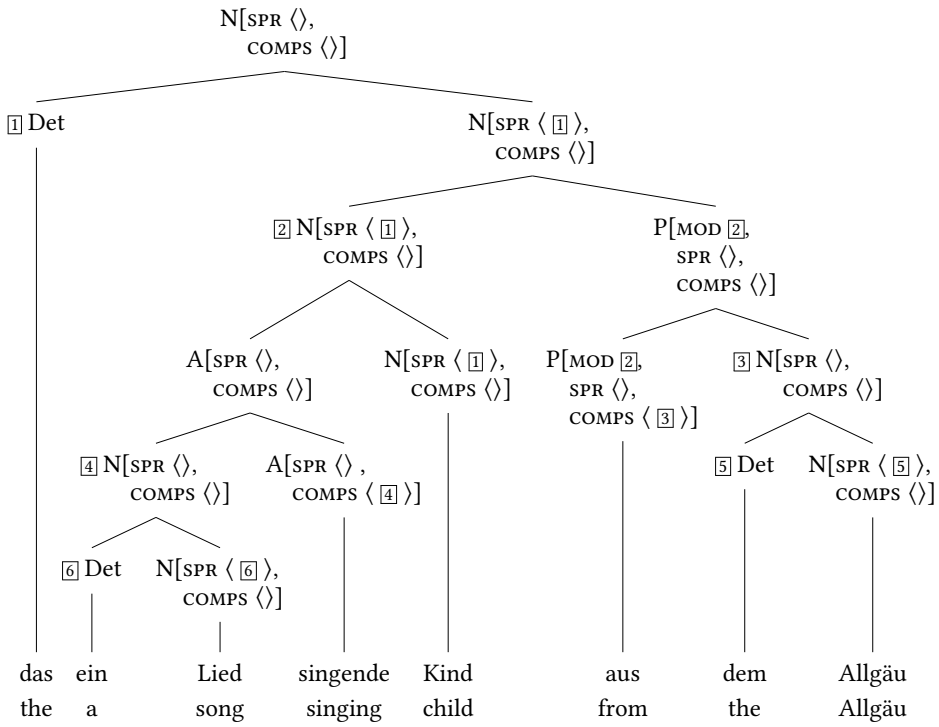
N[SPR ⟨⟩, COMPS ⟨⟩]
1 Det
N[SPR ⟨ 1 ⟩, COMPS ⟨⟩]
2 N[SPR ⟨ 1 ⟩, COMPS ⟨⟩]
P[MOD 2, SPR ⟨⟩, COMPS ⟨⟩]
A[SPR ⟨⟩, COMPS ⟨⟩]
N[SPR ⟨ 1 ⟩, COMPS ⟨⟩]
P[MOD 2, SPR ⟨⟩, COMPS ⟨ 3 ⟩]
3 N[SPR ⟨⟩, COMPS ⟨⟩]
4 N[SPR ⟨⟩, COMPS ⟨⟩]
A[SPR ⟨⟩, COMPS ⟨ 4 ⟩]
5 Det
N[SPR ⟨ 5 ⟩, COMPS ⟨⟩]
6 Det
N[SPR ⟨ 6 ⟩, COMPS ⟨⟩]
das ein Lied singende Kind aus dem Allgäu
the a song singing child from the Allgäu

Figure A.6: Analysis of *das ein Lied singende Kind aus dem Allgäu* 'the child from the Allgäu singing a song'

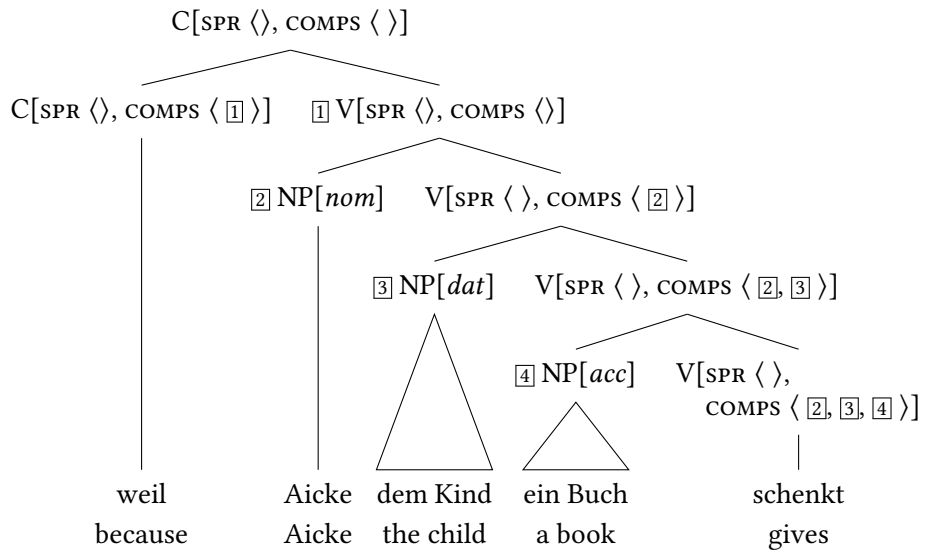

Figure A.7: The analysis of *weil Aicke dem Kind ein Buch schenkt* 'because Aicke gives the child a book as a present'

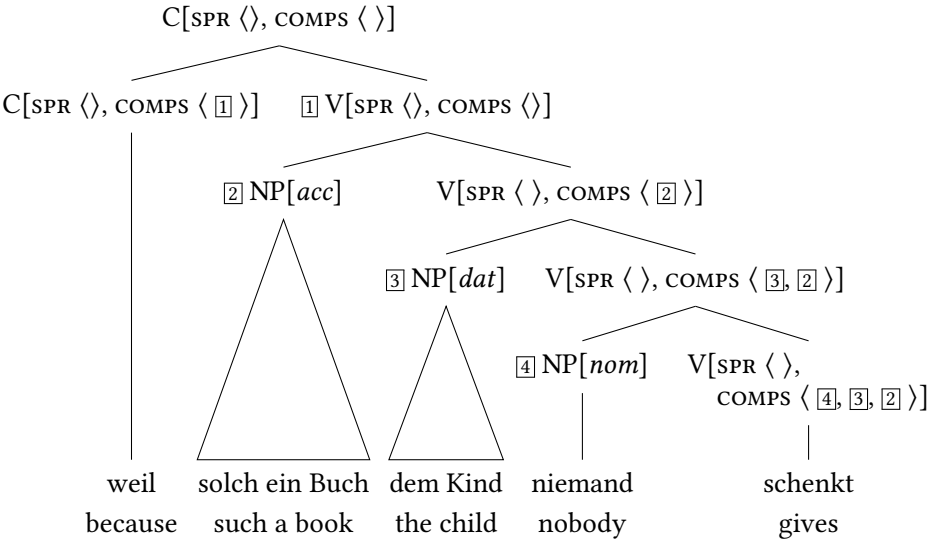

Figure A.8: The analysis of *weil dem Kind solch ein Buch niemand schenkt* 'because nobody gives the child such a book as a present'

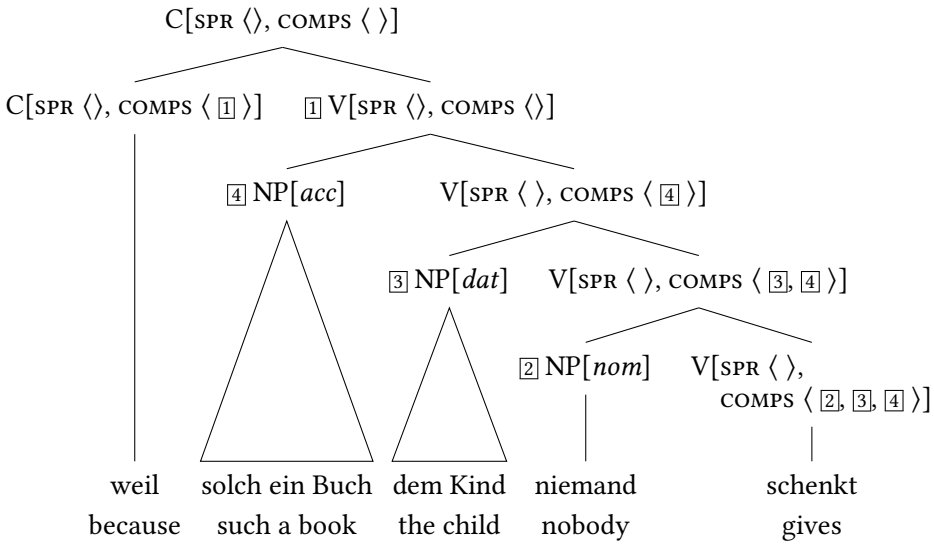

Figure A.9: The analysis of *weil dem Kind solch ein Buch niemand schenkt* 'because nobody gives the child such a book as a present'

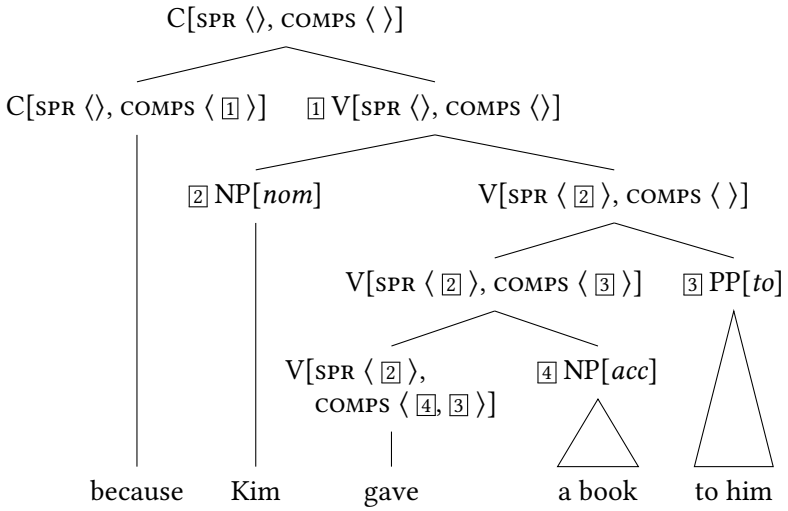

Figure A.10: The analysis of *because Kim gave a book to him*

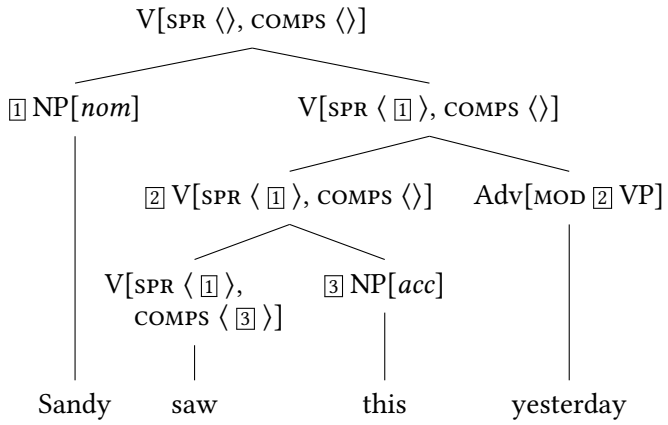

Figure A.11: Analysis of *Sandy saw this yesterday.*

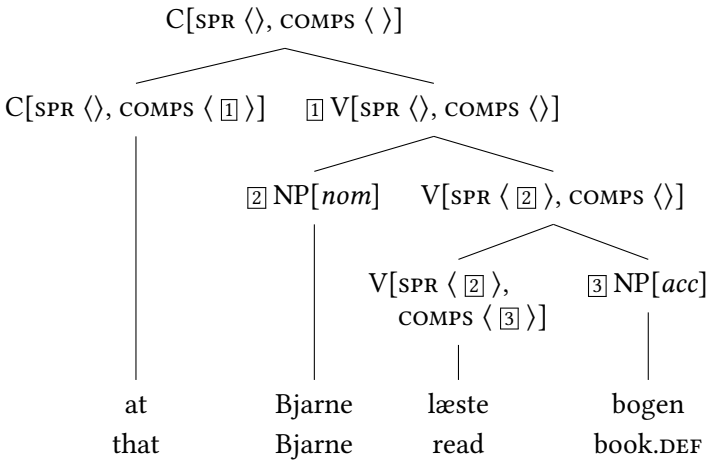

Figure A.12: Analysis of *at Bjarne læste bogen* 'that Bjarne read the book'

A.3 The verbal complex

1. Sketch the analysis of the verbal complexes in the following examples:

(5) a. dass sie darüber lachen muss (German)
that she there.about laugh must
'that she has to laugh about it'

b. dass sie darüber hat lachen müssen
that she there.about has laugh must
'that she had to laugh about it'

c. dass sie darüber wird haben lachen müssen
that she there.about will have laugh must
'that it will be the case that she had to laugh about it'

You may omit the SPR values, since they are the empty list for all German verbs anyway.

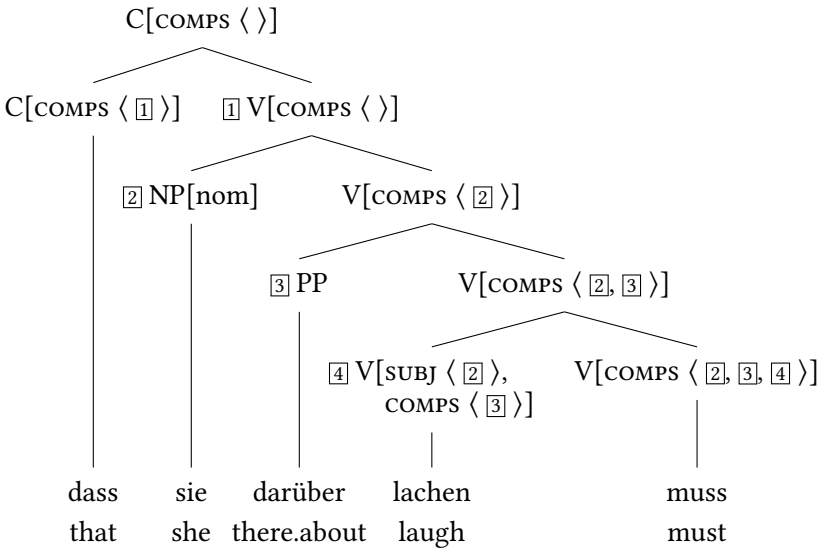

Figure A.13: Analysis of *dass sie darüber lachen muss* 'that she has to laugh about this'

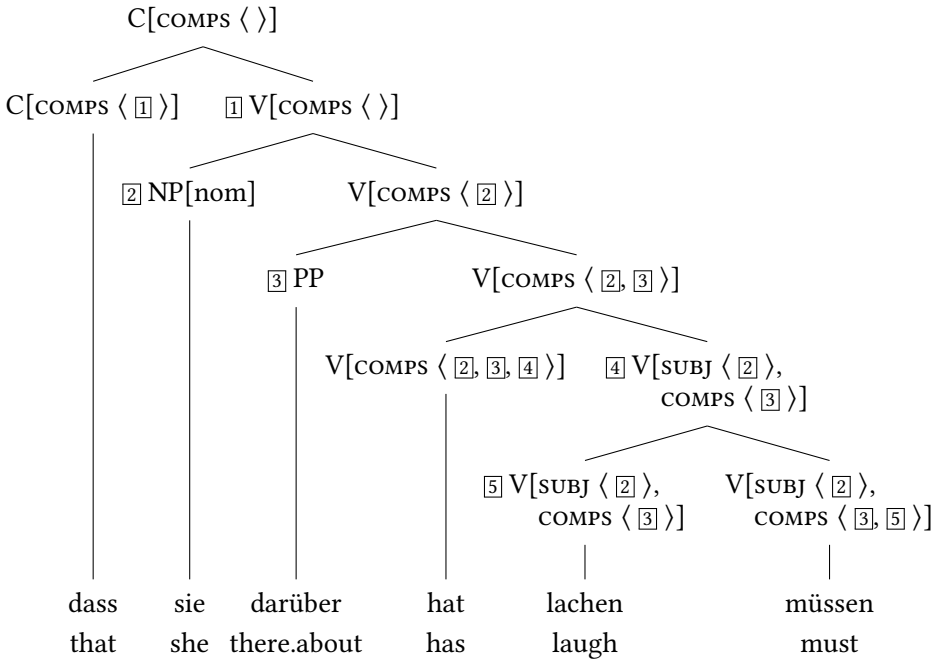
C[COMPS ⟨ ⟩]
C[COMPS ⟨ 1 ⟩]
1 V[COMPS ⟨ ⟩]
2 NP[nom]
V[COMPS ⟨ 2 ⟩]
3 PP
V[COMPS ⟨ 2, 3 ⟩]
V[COMPS ⟨ 2, 3, 4 ⟩]
4 V[SUBJ ⟨ 2 ⟩, COMPS ⟨ 3 ⟩]
5 V[SUBJ ⟨ 2 ⟩, COMPS ⟨ 3 ⟩]
V[SUBJ ⟨ 2 ⟩, COMPS ⟨ 3, 5 ⟩]
dass sie darüber hat lachen müssen
that she there.about has laugh must

Figure A.14: Analysis of *dass sie darüber hat lachen müssen* 'that she had to laugh about this'

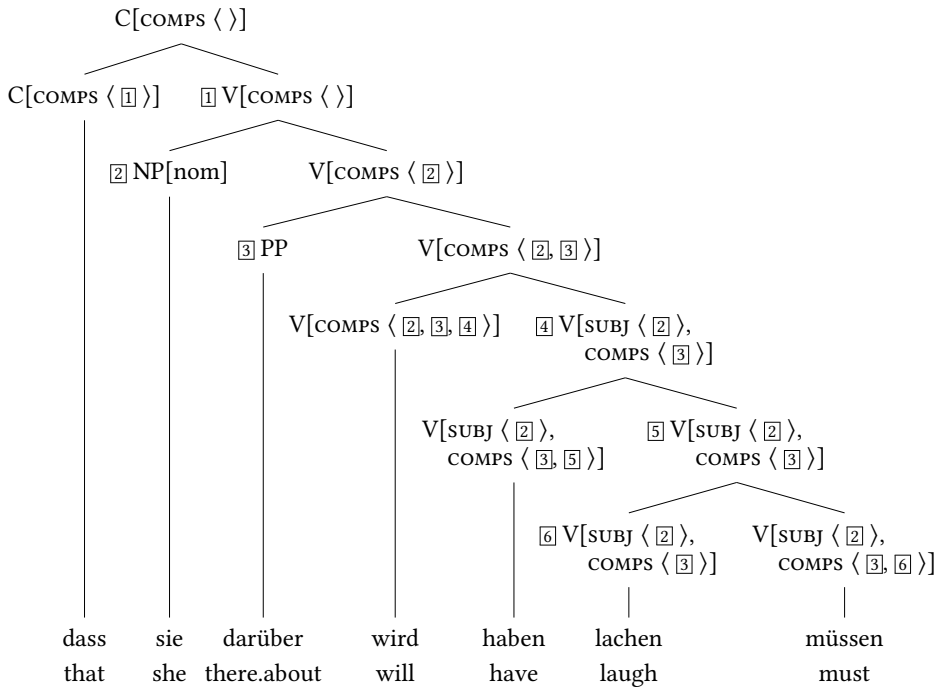
C[COMPS ⟨ ⟩]
C[COMPS ⟨ 1 ⟩]
1 V[COMPS ⟨ ⟩]
2 NP[nom]
V[COMPS ⟨ 2 ⟩]
3 PP
V[COMPS ⟨ 2, 3 ⟩]
V[COMPS ⟨ 2, 3, 4 ⟩]
4 V[SUBJ ⟨ 2 ⟩, COMPS ⟨ 3 ⟩]
V[SUBJ ⟨ 2 ⟩, COMPS ⟨ 3, 5 ⟩]
5 V[SUBJ ⟨ 2 ⟩, COMPS ⟨ 3 ⟩]
6 V[SUBJ ⟨ 2 ⟩, COMPS ⟨ 3 ⟩]
V[SUBJ ⟨ 2 ⟩, COMPS ⟨ 3, 6 ⟩]
dass that
sie she
darüber there.about
wird will
haben have
lachen laugh
müssen must

Figure A.15: Analysis of *dass sie darüber wird haben lachen müssen* 'that it will be the case that she had to laugh about this'

A.4 Verb position: Verb first and verb second

1. Classify the Germanic languages according to their basic constituent order (SVO, SOV, VSO, ...) and V2 assuming that you know that one of the following patterns exist in the language:

(6) a.	NP[acc] V-Aux NP[nom] V NP[dat]	V2 SVO
b.	NP[acc] V-Aux NP[nom] NP[dat] V	V2 SOV
c.	NP[acc] NP[nom] V NP[acc]	−V2 SVO
d.	NP[acc] NP[nom] V-Aux V NP[acc]	−V2 SVO
e.	NP[acc] V-Aux NP[nom] V PP	not classifiable

The pattern in (6a) cannot be Englih, since English does not have a dative. Hence it is a V2 language. The dative object follows the verb, so it must be an SVO language. An example would be Icelandic.

(7)

(6b) has an auxiliary and two NPs followed by a verb. Since the dative object would follow the verb in an SVO language, it must be a SOV language. Since all Germanic SOV languages are also V2 languages, (6b) must be a V2 language. German and Dutch would be examples.

(8) Den Roman hat jemand dem Kind gegeben.
the.ACC novel has somebody.NOM the.DAT child given
'Somebody has given the child the novel.'

Ignoring multiple frontings in German (Müller 2003a), (6c) must be a non-V2 pattern. The language can only be English:

(9) This book, Kim gave Sandy.

For the same reason, (6d) is non-V2 and SVO. The language must be English:

(10) This book, Kim had given Sandy.

The pattern in (6e) cannot be unambiguously classified with respect to V2 and SOV/SVO. Since PPs can be extraposed easily, it could be an SOV langauge with extraposition (e.g., German) or it could be English with question formation (residual V2):

(11) a. Wen hat Aicke gesehen bei der Demonstration.
who has Aicke seen during the rally
'Who has Aicke seen during the rally.'
b. Who did Kim see during the rally?

2. Sketch the analysis for the following examples. Use the abbreviations used in this chapter, that is, do not go into the details regarding SPR and COMPS values but use S, VP, and V′.

(12) a. Arbejder Bjarne ihærdigt på bogen? (Danish)
works Bjarne seriously at book.DEF
'Does Bjarne work seriously on the book?'
b. Arbeitet Bjarne ernsthaft an dem Buch? (German)
works Bjarne seriously at the book
'Does Bjarne work seriously on the book?'
c. Wird sie darüber nachdenken? (German)
will she there.upon think
'Will she think about this?'

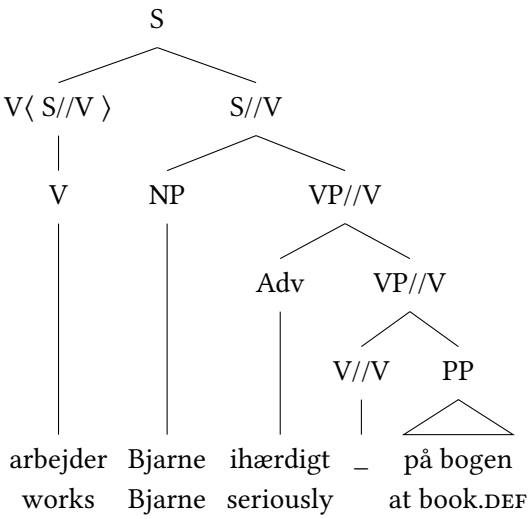

Figure A.16: Analysis of *Arbejder Bjarne ihærdigt på bogen?* 'Does Bjarne work seriously on the book?'

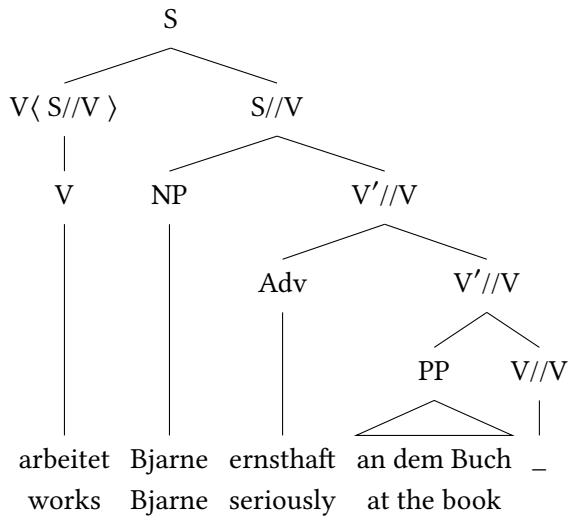

Figure A.17: Analysis of *Arbejder Bjarne ihærdigt på bogen?* 'Does Bjarne work seriously on the book?'

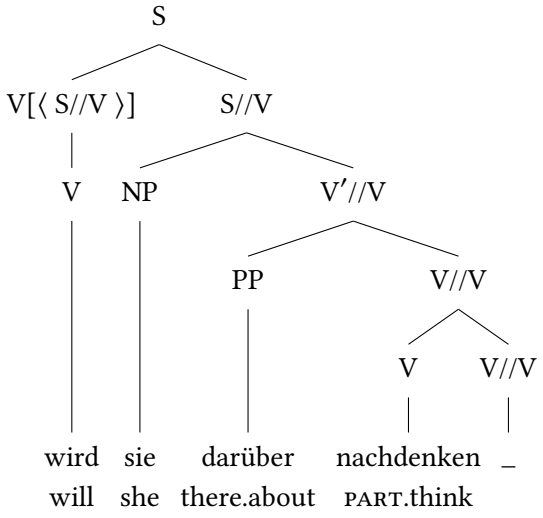

Figure A.18: Analysis of *Wird sie darüber nachdenken?* 'Will she think about this?'

3. Sketch the analysis for the following examples. Use the valence features SPR and COMPS rather than the abbreviations S, VP, and V′. Since the value of SPR in German is always the empty list, you may omit it in the German examples. NPs and PPs can be abbreviated as NP and PP, respectively.

(13) a. dass sie darüber nachdenkt (German)
that she there.upon PART.thinks
'that she laughs about this'

b. dass sie darüber nachdenken wird
that she there.upon PART.think will
'that she will think about this'

c. Wird sie darüber nachdenken?
will she there.upon think
'Will she think about this?'

(14) a. Arbejder Bjarne ihærdigt på bogen? (Danish)
works Bjarne seriously at book.DEF
'Does Bjarne work seriously on the book?'

b. Arbeitet Bjarne ernsthaft an dem Buch? (German)
works Bjarne seriously at the book
'Does Bjarne work seriously on the book?'

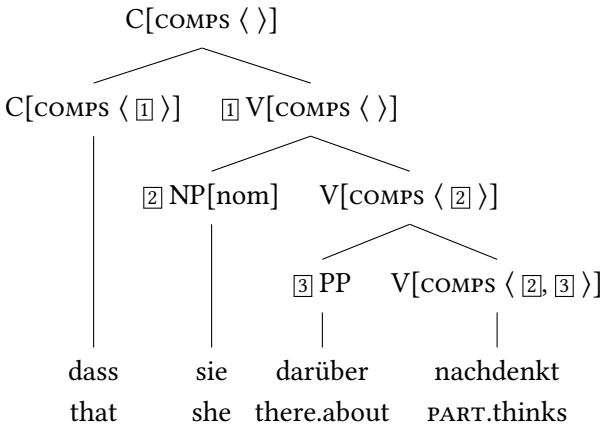

Figure A.19: Analysis of *dass sie darüber nachdenkt* 'that she thinks about this'

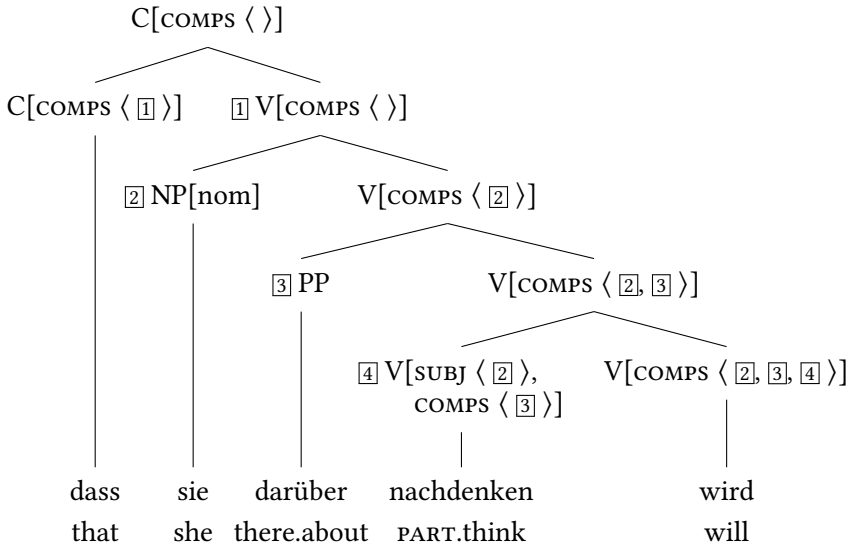

Figure A.20: Analysis of *dass sie darüber nachdenken wird* 'that she will think about this'

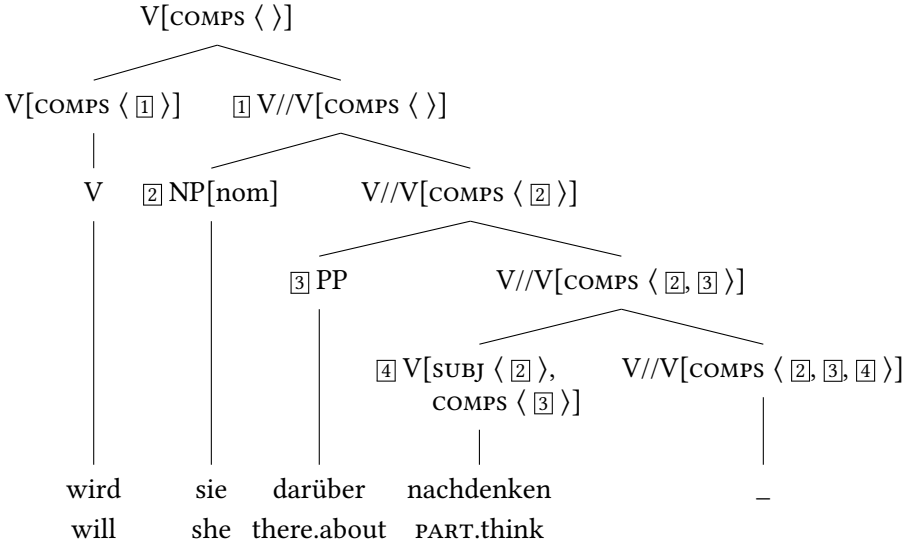

Figure A.21: Analysis of *Wird sie darüber nachdenken?* 'Will she think about this?'

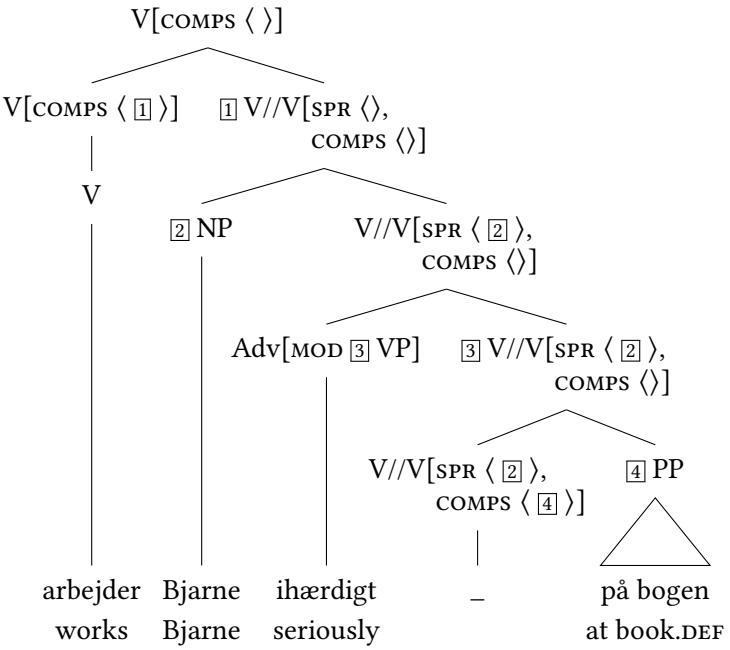
V[COMPS ⟨ ⟩]
V[COMPS ⟨ 1 ⟩]
1 V//V[SPR ⟨⟩, COMPS ⟨⟩]
V
2 NP
V//V[SPR ⟨ 2 ⟩, COMPS ⟨⟩]
Adv[MOD 3 VP]
3 V//V[SPR ⟨ 2 ⟩, COMPS ⟨⟩]
V//V[SPR ⟨ 2 ⟩, COMPS ⟨ 4 ⟩]
4 PP
arbejder Bjarne ihærdigt _ på bogen
works Bjarne seriously at book.DEF

Figure A.22: Analysis of *Arbejder Bjarne ihærdigt på bogen?* 'Does Bjarne work seriously on the book?'

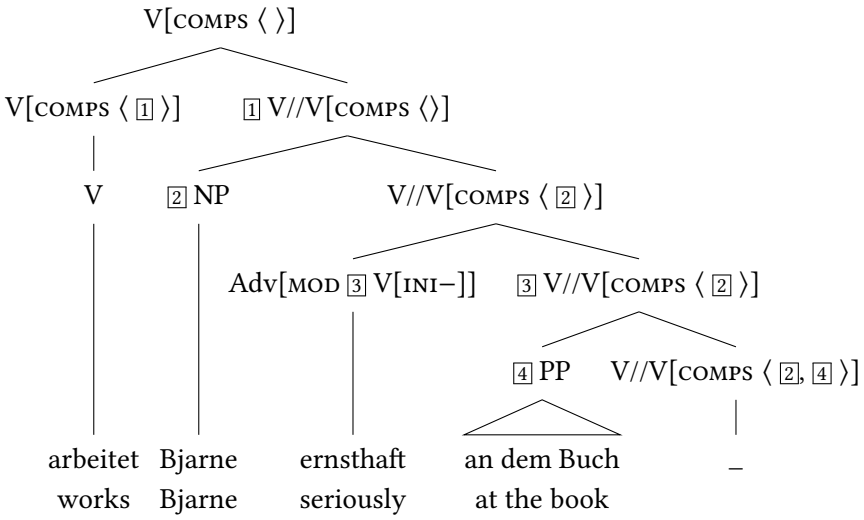

Figure A.23: Analysis of *Arbeitet Bjarne ernsthaft an dem Buch?* 'Does Bjarne work seriously on the book?'

4. Sketch the analysis of the following examples. NPs may be abbreviated. Valence features should not be given, but node labels like V, V′, VP and S should be used instead. If non-local dependencies are involved indicate them using the '/' symbol.

   (15) a. Such books, I like.

   b. Solche Bücher mag ich. (German)
   such books like I
   'I like such books.'

   c. Boger som det elsker jeg. (Danish)
   books like this like I
   'I like such books.'

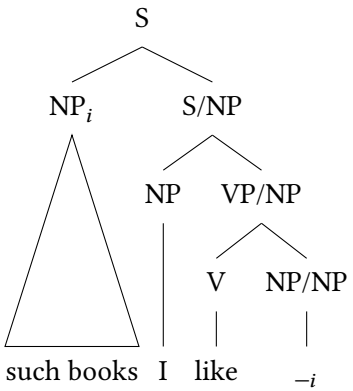

Figure A.24: Analysis of *Such books, I like.*

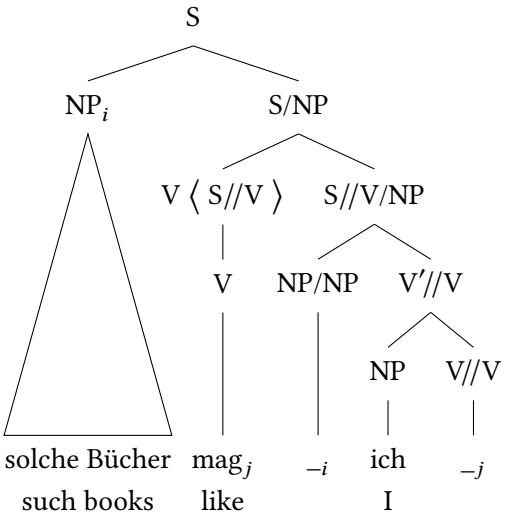

Figure A.25: Analysis of the German example *Solche Bücher mag ich.* 'I like such books.'

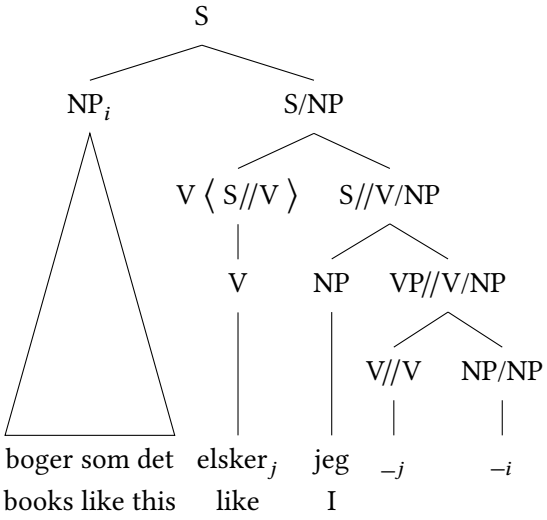

Figure A.26: Analysis of the Danish example *Boger som det elsker jeg.* 'I like such books.'

A.5 Passive

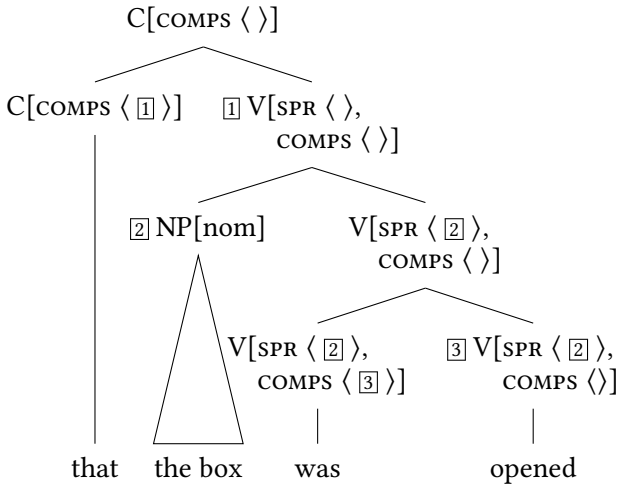

Figure A.27: Analysis of the passive sentences *that the box was opened*

The transitive verb *open* takes a subject and an object. The ARG-ST list contains two NPs with structural case. The passive lexical rule removes one argument. For the passive participle this leaves us with one element on the ARG-ST list. This element gets mapped to the SPR list of *opened*. The passive auxiliary takes a VP in passive form and takes over its element from SPR. After combination of auxiliary and passive VP, we have the VP *was opened* still selecting for a specifier. The NP *the box* functions as the specifier and the combination of *the box* and *was opened* is a complete sentence.

A.6 Clause types and expletives

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Germanic syntax

This book is an introduction to the syntactic structures that can be found in the Germanic languages. The analyses are couched in the framework of HPSG light, which is a simplified version of HPSG that uses trees to depict analyses rather than complicated attribute value matrices.

The book is written for students with basic knowledge about case, constituent tests, and simple phrase structure grammars (advanced BA or MA level) and for researchers with an interest in the Germanic languages and/or an interest in Head-Driven Phrase Structure Grammar/Sign-Based Construction Grammar without having the time to deal with all the details of these theories.